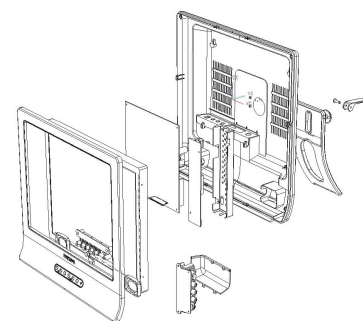


Service
Service
Service



E 152710 000-000
2007/04

Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connection Overview
- 1.3 Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	: LCD
Screen size	: 14" (37 cm), 4:3
Resolution (HxV pixels)	: 640x480
Contrast ratio	: 450:1
Light output (cd/m ²)	: 450
Response time (ms)	: 16
Viewing angle (HxV degrees)	: 140x120
Tuning system	: PLL
TV Colour systems	: PAL B/G, D/K, I
	: SECAM B/G, D/K, L/L'
Video playback	: NTSC M/N 3.58, 4.43
	: PAL B/G
	: SECAM L/L'
Supported formats	: VGA (640x480)
Channel selections	: 100 presets
	: VHF
	: UHF
	: S-band
	: Hyper-band

1.1.2 Sound

Sound systems	: FM-stereo B/G
	: NICAM B/G, D/K, I, L
Maximum power (W _{RMS})	: 2 x 2

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V _{AC})	: 100 - 240
- Mains frequency (Hz)	: 50 / 60

Ambient conditions:	
- Temperature range (°C)	: +5 to +40
- Maximum humidity	: 90% R.H.

Power consumption	
- Normal operation (W)	: ≈ 40
- Stand-by (W)	: < 2

Dimensions (WxHxD in cm)	: 34x32x6.3
--------------------------	-------------

Weight (kg)	: 4.8
-------------	-------

1.2 Connection Overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Side Connections

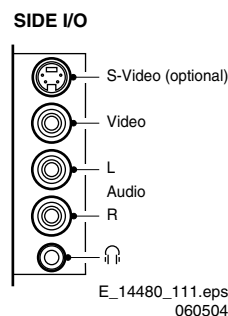


Figure 1-1 Side I/O

1.2.2 Rear Connections

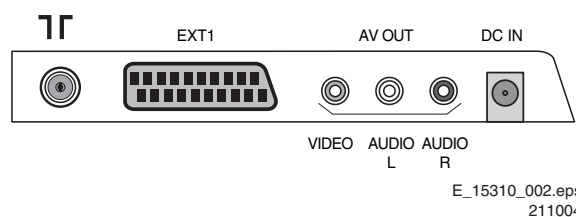


Figure 1-2 Rear I/O

Aerial - In
- IEC-type (EU) Coax, 75 ohm T

Cinch: Video CVBS - Out, Audio - Out
Ye - Video CVBS 1 V_{PP} / 75 ohm ⊗
Wh - Audio L 0.5 V_{RMS} / 10 kohm ⊗
Rd - Audio R 0.5 V_{RMS} / 10 kohm ⊗

Power: DC - In
1 - 12 V ⊕

External 1: Video RGB/YUV - In, CVBS - In/Out, Audio - In/Out

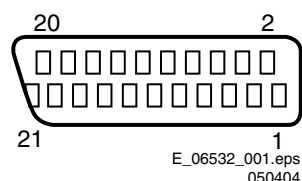


Figure 1-3 SCART connector

1	- Audio R	0.5 V _{RMS} / 1 kohm	⊗
2	- Audio R	0.5 V _{RMS} / 10 kohm	⊗
3	- Audio L	0.5 V _{RMS} / 1 kohm	⊗
4	- Ground Audio	Gnd	⊥
5	- Ground Blue	Gnd	⊥
6	- Audio L	0.5 V _{RMS} / 10 kohm	⊗
7	- Video Blue/U	0.7 V _{PP} / 75 ohm	⊗

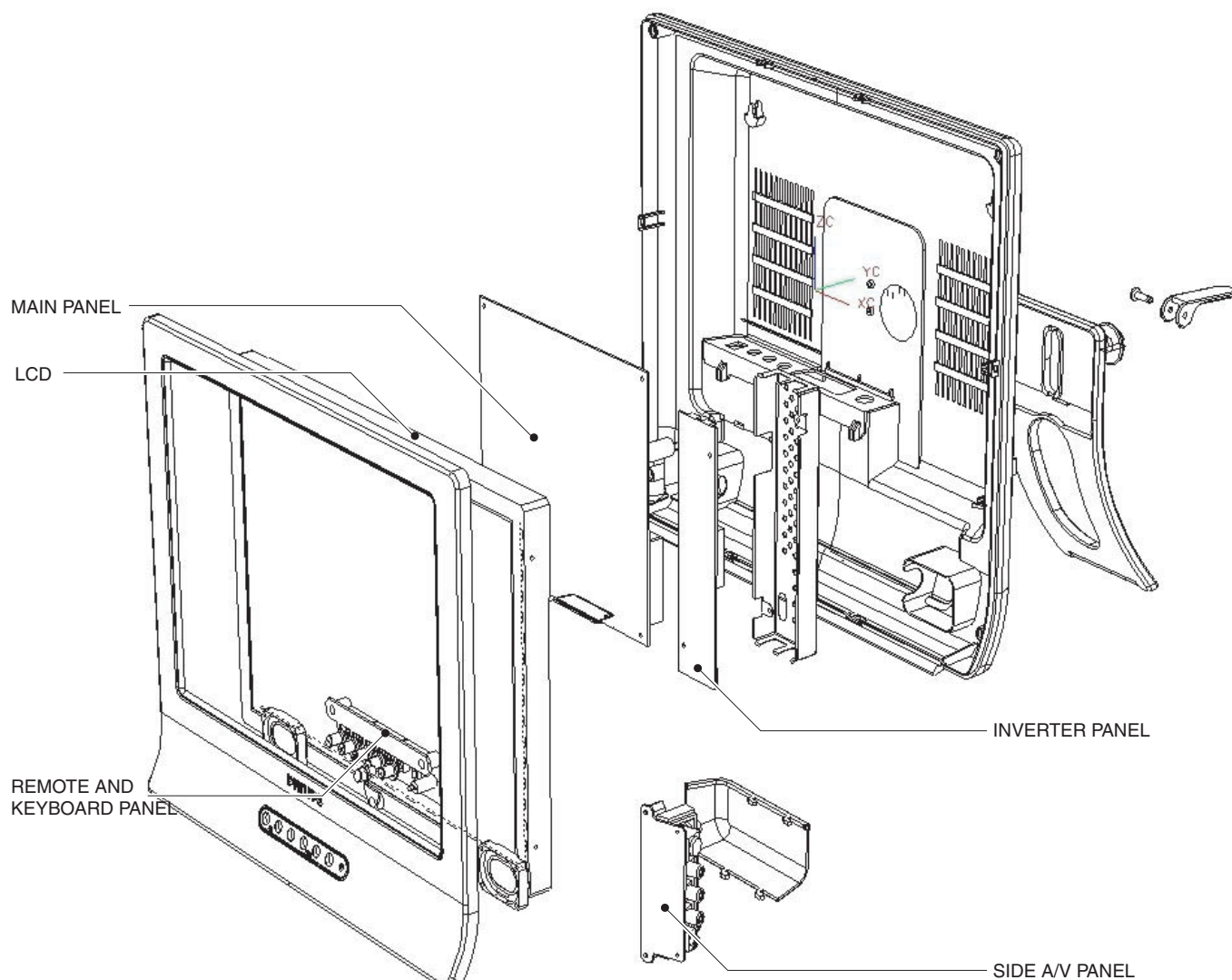
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Ground Gn	Gnd	⊕
10	- n.c.		⊕
11	- Video Grn/Y	0.7 or 1 V _{PP} / 75 ohm	⊕
12	- n.c.		⊕
13	- Ground Red	Gnd	⊕
14	- n.c.		⊕



15	- Video Red/V	0.7 V _{PP} / 75 ohm	⊕
16	- RGB Ctrl	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊕
17	- Ground Video	Gnd	⊕
18	- Ground RGB Ctrl	Gnd	⊕
19	- Video CVBS	1 V _{PP} / 75 ohm	⊕
20	- Video CVBS	1 V _{PP} / 75 ohm	⊕
21	- Shield	Gnd	⊕



1.3 Chassis Overview



E_15310_001.eps
241104

Figure 1-4 Chassis Overview

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Warnings
- 2.3 Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Connect the set to the Mains (AC Power) via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () or hot ground () , depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2.3.2 Schematic Notes

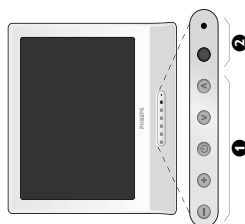
- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

Presentation of the LCD Television



1 Television keys:

- : to switch the TV on or off.
- ⊕: to adjust sound level.
- ⊖: to select programmes.
- MENU: to access or close menus, simultaneously press the ⊖ and ⊕ keys.
- ⊖ ⊕: the ⊖ ⊕ keys can be used to select an adjustment and the ⊖ ⊕ keys to make that adjustment.
- On-light and infrared sensors.

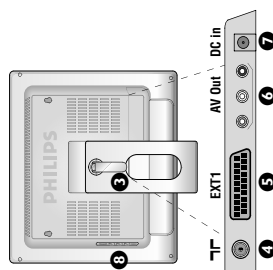
Rear of set:

The main connections are made at the bottom of the television.

3 Adjustable stand.

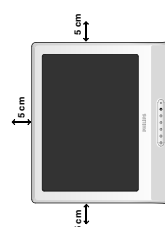
The stand can be removed and replaced with a wall mounting kit available as an option (ask your dealer).

- 4 TV aerial sockets
- 5 EXT1 socket
- 6 Audio/Video output for connecting an amplifier:
- 7 DC supply socket
- 8 Side connections



Positioning the television set

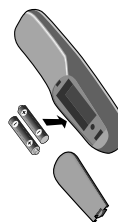
Place your TV on a solid stable surface. To avoid danger do not expose the TV to water, or a heat source (e.g. lamp, candle, radiator). Do not obstruct the ventilation grid at the rear:



Remote control

insert the two R6-type batteries supplied, making sure they are the right way round.

The batteries supplied with the appliance do not contain mercury or nickel cadmium so as to protect the environment. Please do not discard your used batteries, but use the recycling methods available (consult your distributor).



Introduction

Thank you for purchasing this television set.
This handbook has been designed to help you install and operate your TV set.
We would strongly recommend that you read it thoroughly.
We hope our technology meets entirely with your satisfaction.

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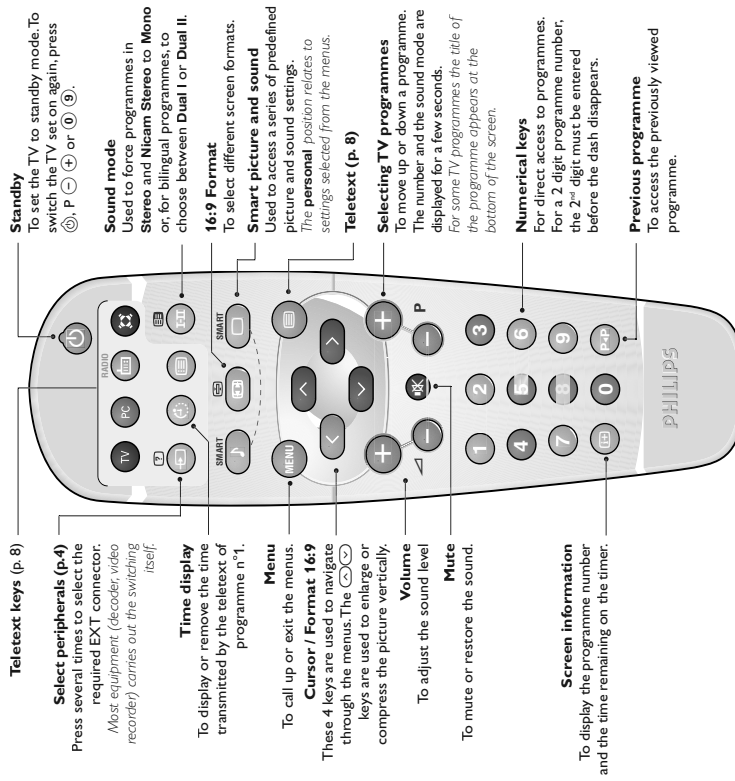
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Recycling

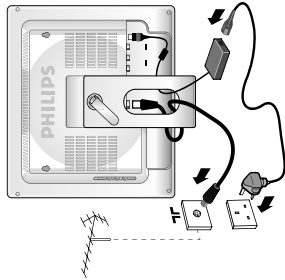
Recycling
The materials used in your set are either reusable or can be recycled. To minimise environmental waste, specialist companies collect used appliances and dismantle them after retrieving any materials that can be used again (ask your dealer for further details).



Remote control keys



Connecting



Connecting peripheral equipment

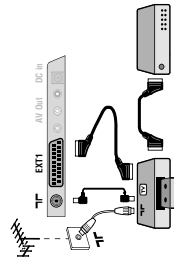
Video recorder

Video recorder (or DVD recorder)

Carry out the connections shown opposite, using a good quality euroconnector cable.

Video recorder with decoder

Connect the decoder to the second euroconnector socket of the video recorder. You will then be able to record scrambled transmissions.

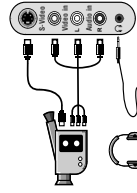


Other equipment



Satellite receiver, decoder, DVD, games, etc.
Make the connections as shown opposite.

Side connections



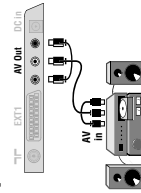
Make the connections as shown opposite. With the key, select S AV.

Headphones

When headphones are connected, the sound on the TV set will be cut. The keys are used to adjust the volume level.

The headphone impedance must be between 32 and 600 Ohms.

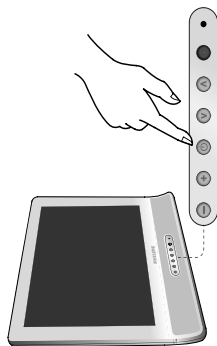
Amplifier



To connect a Hi-Fi unit, use an audio/video connecting cable and connect :

- The "L" and "R" outputs of the TV set to an "AUDIO IN" "L" and "R" of the Hi-Fi unit.
- The "VIDEO" output of the TV set to a "VIDEO IN" input of the amplifier.

Switching on

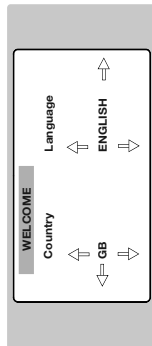


To switch on the set, press the **Power** key.
Go straight to the Quick Installation chapter.
If the TV remains in standby mode (red indicator), press the **P** (+) key on the remote control.

Plug a Play

Quick installation

When you turn on the TV set for the first time, a menu is displayed on screen. This menu prompts you to select the country and language for the menus:

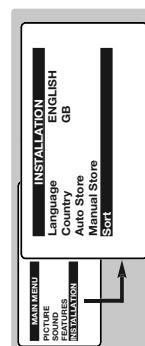


⚠ If the menu is not displayed, press and hold down the **Left** and **Right** keys on the TV set for 5 seconds to display the menu.

- 1 Use the **Left** and **Right** keys on the remote control to select your country and validate with **Enter**.
If your country does not appear in the list, select choice "...".
- 2 Next select your language using the **Left** and **Right** keys and validate with **Enter**.
- 3 The search starts automatically.
Finally the **INSTALLATION** menu appears automatically.
If the programmes found have not been correctly numbered, use the **Sort** menu to renumber them.
- 4 If you want to exit the menu, press **Exit** several times.

Programme sort

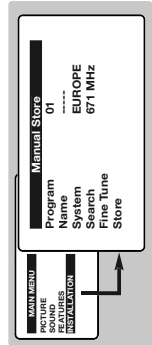
This menu allow you to change the numbering of programmes.



- 1 Press the **Exit** key. The **MAIN MENU** is displayed on the screen.
- 2 Select the **INSTALLATION** menu with the cursor then the **Sort** menu.
- 3 Select the programme you want to move with the **Left** and **Right** keys and press **Enter**.
- 4 Then use the **Left** and **Right** keys to choose the new number and confirm with **Enter**.
- 5 Repeat steps 3 and 4 as many times as required to move the programmes.
- 6 To exit the menu, press **Exit** several times.

Manual store

This menu is used to store the programmes one at a time or to add a programme to the existing list.
Press the **Exit** key to display the **MAIN MENU**.
Select **INSTALLATION** with the cursor then the manual store menu then press **Enter**.



- 2 **System**: select **Europe** (automatic detection^(*)) or according to the versions **Western Europe** (BG standard), **Eastern Europe** (DK standard), **United Kingdom** (I standard) or **France** (LL standard).
* Except for France (LL standard), you must select the choice **France**.

- 3 **Search**: press **Enter**. The search starts. Once a programme is found, the scanning stops.
Go to the next step. If you know the frequency of the required programme, enter its number directly with the **0** to **9** keys.
If no picture is found, consult the possible solutions (p. 8).
- 4 **Fine tune**: if the reception is not satisfactory, adjust using the **Left** and **Right** keys.
- 5 **Program**: enter the desired number with the keys **0** to **9** or **0** to **9**.
- 6 **Name**: use the **Left** and **Right** keys to move around the name display area (5 characters) and the **Left** and **Right** keys to select the characters.
When the name has been entered press the **Enter** key to exit.
- 7 **Store**: press **Enter**. The programme is stored.
- 8 Repeat steps 2 to 7 for each programme to be stored.
- 9 To exit the menu press **Exit** several times.

Other settings in the Installation menu

- 1 Press the **Exit** key and select the **INSTALLATION** menu.
- 2 **Language**: to change the display language for the menus.
- 3 **Country**: to select your country (GB for Great Britain).
This setting is used for the search, automatic programme sort and teletext display. If your country does not appear in the list, select "...".
- 4 **Auto Store**: to start automatic search for all programmes available in your region.
Finally the **INSTALLATION** menu appears automatically. If the programmes found have not been correctly numbered, use the **Sort** menu to renumber them.
- 5 If you want to exit the menu, press **Exit** several times.

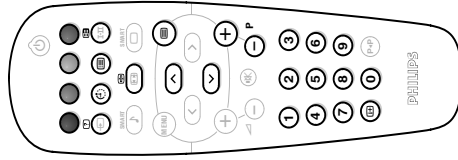
Teletext

Teletext is an information system broadcast by certain channels which can be consulted like a newspaper. It also offers access to subtitles for viewers with hearing problems or who are not familiar with the transmission language (cable networks, satellite channels, etc.).

Press :  **Teletext on/off**

You will obtain:

This is used to call teletext, change to transparent mode and then exit. The summary appears with a list of items that can be accessed. Each item has a corresponding 3 digit page number. If the channel selected does not broadcast teletext, the indication 100 will be displayed and the screen will remain blank (in this case, exit teletext and select another channel).



Selecting a page

Enter the number of the page required using the  or  keys. Example: page 120, enter   . The number is displayed top left, the counter turns and then the page is displayed. Repeat this operation to view another page. If the counter continues to search, this means that the page is not transmitted. Select another number.

Direct access to the items

Coloured areas are displayed at the bottom of the screen. The 4 coloured keys are used to access the items or corresponding pages.

The coloured areas flash when the item or the page is not yet available.

Contents

This returns you to the contents page (usually page 100).

Enlarge a page

This allows you to display the top or bottom part of the page and then return to normal size.

Stop sub-page acquisition

Certain pages contain sub-pages which are automatically displayed successively. This key is used to stop or resume sub-page acquisition. The indication  appears top left.

Hidden information

To display or hide the concealed information (games solutions).

Direct selection of a sub-page

This allows you to select teletext sub-page.

Temporary stop

This is used to temporarily disable or activate the teletext display.

Tips

Poor reception

The proximity of mountains or high buildings may be responsible for ghost pictures, echoing or shadows. In this case, try manually adjusting your picture: see **Fine Tune** (p.6) or modify the orientation of the outside aerial. Does your antenna enable you to receive broadcasts in this frequency range (UHF or VHF band)?

No picture

Have you connected the aerial socket properly? Have you chosen the right system? (p.6). Poorly connected euroconnector cables or aerial sockets are often the cause of picture or sound problems. Check all connections.

No sound

If on certain channels you receive a picture but no sound, this means that you do not have the correct TV system. Modify the **System** setting (p.6). The amplifier connected to the TV does not deliver any

sound? Check that you have not confused the audio output with the audio input.

Standby

If the set receives no signal for 15 mins, it automatically goes into standby mode. To save power, your set is fitted with components that give it a very low power consumption when in standby mode (less than 2 W).

Cleaning the set

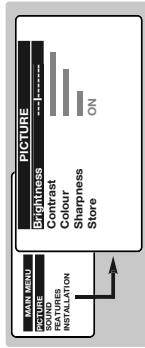
Only use a clean, soft and lint-free cloth to clean the screen and the casing of your set. Do not use alcohol-based or solvent-based products.

Still no results?

Disconnect the mains plug of the TV for 30 seconds then reconnect it. If your TV set breaks down, never attempt to repair it yourself: contact your dealer's after-sales service.

Picture settings

- Press  several times to exit the menus. The PICTURE menu appears :



Description of the adjustments:

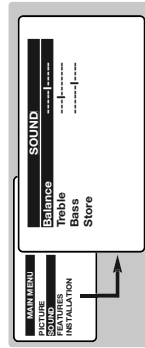
- **Brightness** : this changes the picture brilliance.
- **Contrast** : this changes the difference between the light and dark tones.
- **Colour** : this changes the intensity of the colour.
- **Sharpness** : this changes the picture definition
- **Store** : to store the picture adjustments.

- Use the   keys to select a setting and   keys to adjust.

- Once the adjustments have been made select **Store** and press  to store them.

Sound adjustments

- Press  select **SOUND** () and press . The SOUND sound menu is displayed :



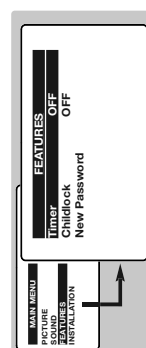
Description of the settings :

- **Balance** : to balance the sound on the left and right speakers.
- **Treble** : this alters the high frequency sounds.
- **Bass** : this alters the low frequency sounds.
- **Store** : this is used to store sound settings.

- Use the   keys to select a setting and the   keys to adjust.

Feature settings

- Press  select **FEATURES** () and press . You can adjust:



- Timer** : to select an automatic standby period.

- Childlock** : This menu lets you block use of the TV set.

Tips

The proximity of mountains or high buildings may be responsible for ghost pictures, echoing or shadows. In this case, try manually adjusting your picture: see **Fine Tune** (p.6) or modify the orientation of the outside aerial. Does your antenna enable you to receive broadcasts in this frequency range (UHF or VHF band)?

No picture

Have you connected the aerial socket properly? Have you chosen the right system? (p.6). Poorly connected euroconnector cables or aerial sockets are often the cause of picture or sound problems. Check all connections.

No sound

If on certain channels you receive a picture but no sound, this means that you do not have the correct TV system. Modify the **System** setting (p.6). The amplifier connected to the TV does not deliver any

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Still no results?

Disconnect the mains plug of the TV for 30 seconds then reconnect it. If your TV set breaks down, never attempt to repair it yourself: contact your dealer's after-sales service.

4. Mechanical Instructions

Index of this chapter:

- 4.1 Service Positions
- 4.2 Assy/Panel Removal
- 4.3 Set Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order.

4.1 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging.
- Foam bars (created for service).

4.1.1 Foam Bars

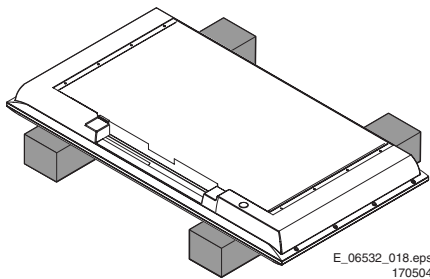


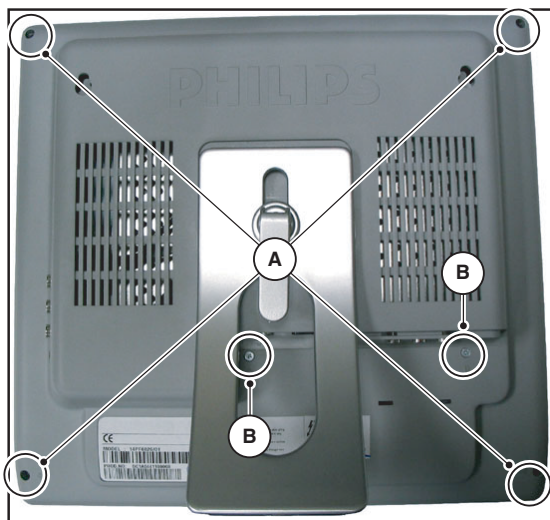
Figure 4-1 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

4.2 Assy/Panel Removal

Before removing the cover, turn off LCD TV and plug off the adapter socket.

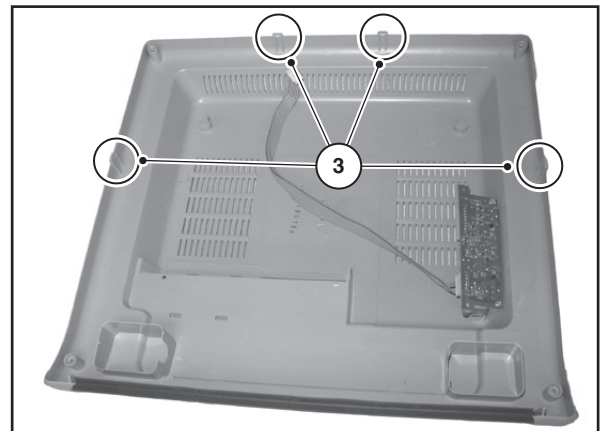
4.2.1 Rear Cover



E_15130_003.eps
211004

Figure 4-2 Rear cover

1. Remove the connector cover.
2. Remove the 4 screws at the corner (A) and the two in the middle (B) that secure the rear cover.

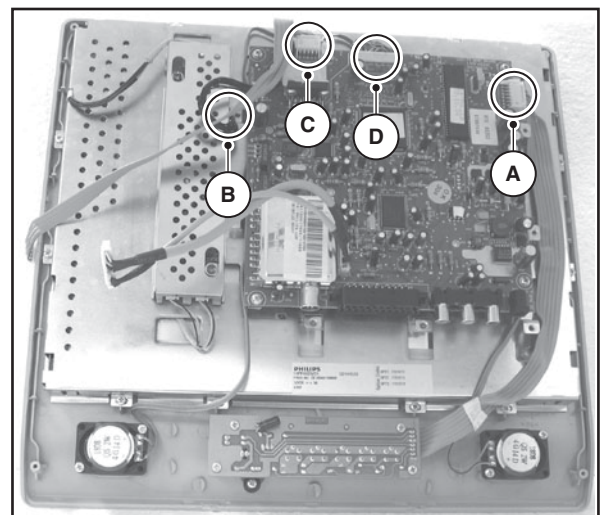


E_15130_004.eps
211004

Figure 4-3 inside Rear cover

3. Lift the rear cover at the bottom. Be aware of the clamps at the left and right side and at the top (2x) of the cover. Make sure that wires are not damaged during cover removal.
4. Remove the two side AV connectors from the side connector panel and the headphone connector from the main panel.

4.2.2 Main Panel



E_15130_015.eps
051104

Figure 4-4 Main panel

1. Remove connector (A) to remote and keyboard panel.
2. Remove connector (B) to inverter panel.
3. Remove both the speaker connectors (C).
4. Remove connector to LCD panel (D).
- Caution:** Be careful, because this connection is very fragile!
5. Remove the 4 screws from the main panel.
6. Take out the panel.

4.2.3 Invertor Panel

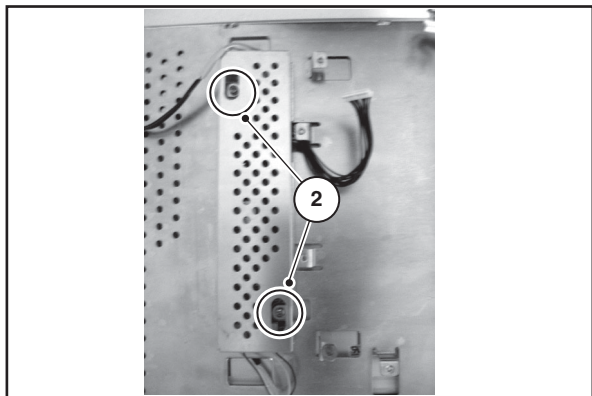
E_15130_006.eps
221004

Figure 4-5 Invertor panel

1. Remove the 4 connectors to LCD panel.
2. Remove the 2 fixation screws that hold the shield and Invertor panel.
3. Take out the shield.
4. Take out the panel.

4.2.4 LCD Panel

Important: Be sure to work in a dust free environment during the following activities. In addition, the use of (fabric) hand gloves is advised.

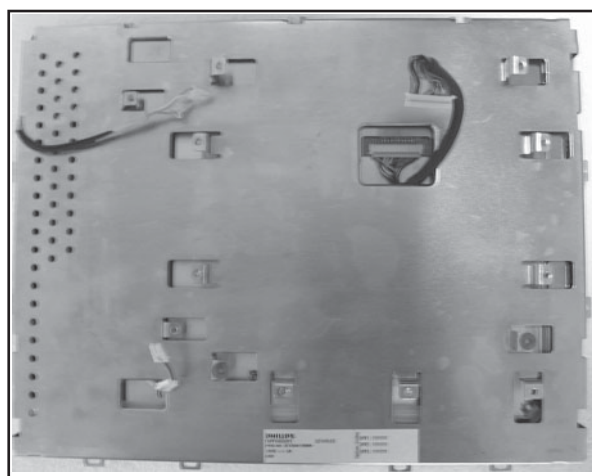
E_15130_007.eps
221004

Figure 4-6 LCD panel disassembly

1. Place the TV set face down on the foam bars. Place the bars at the edges of the set, so they will support the front frame and not only the glass plate!
2. Remove all the parker screws around the frame.
3. Lift the LCD panel including the metal cover from the plastic frame.
4. Remove the screws (4) that hold the LCD panel.
5. Remove the LCD panel from the metal cover. Be careful, don't damage the cables and be aware of the cable positions.

4.2.5 Remote and Keyboard Panel

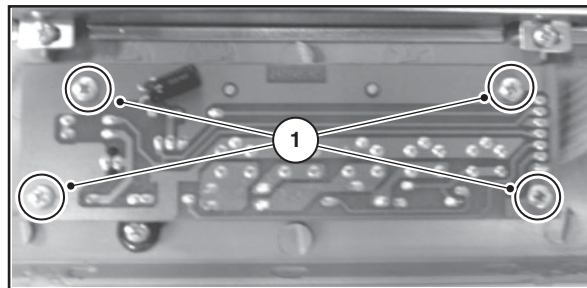
E_15130_008.eps
221004

Figure 4-7 Remote and Keyboard panel

1. Remove the fixation screws.
2. Take out the panel.
3. Be aware of the buttons, they are not fixed in the frame.

4.2.6 Side Connector Panel

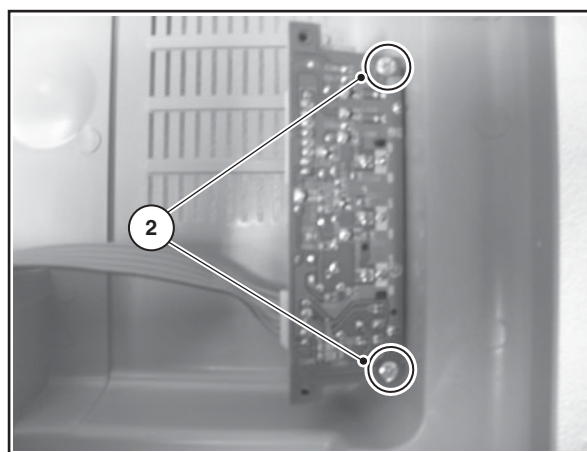
E_15130_009.eps
221004

Figure 4-8 Side connector panel

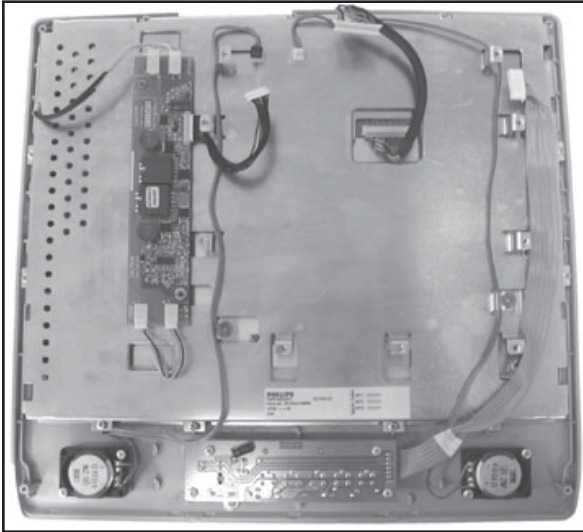
1. Disconnect all cables from the panel.
2. Remove the fixation screws and take out the panel.

4.3 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position. See figure "Cable dressing".



E_15130_010.eps
221004

Figure 4-9 Cable dressing

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Test Points
- 5.2 Service Mode
- 5.3 Problems and Solving Tips
- 5.4 Fault Finding and Repair Tips

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics test points are identified with TPxx. These test points are specifically mentioned in the service manual as “half moons” with a dot in the centre.

Perform measurements under the following conditions:

- Television set in Service Mode.
- Video input: Colour bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Mode

Service mode offers several features for the service technician.

5.2.1 Service Menu

Purpose

- To change option settings.
- To enable / disable hotel mode.
- To perform alignments.

Specifications

- Software version and Option settings display.
- Option settings.
- Software alignments (Geometry and Audio).
- Hotel mode.
- Automatic Gain Control.

How to enter

Press the following key sequence on the remote control transmitter: “062596” directly followed by the OSD/STATUS/INFO button (do not allow the OSD display to time out between entries while keying the sequence).

After entering Service Menu, the following screen is visible.

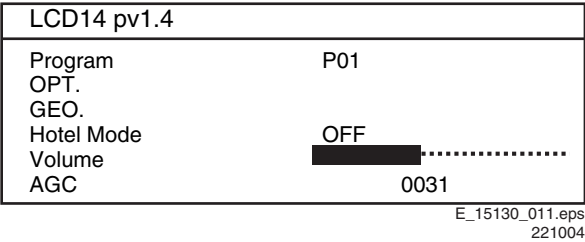


Figure 5-1 Service Menu

Menu explanation

1. **AAAAA BB X.XX.** This is the software identification of the Main microprocessor:
 - **A**= the chassis name (LCD14).
 - **B**= software identification: pv= Philips Version
 - **X**= the Main software version number (updated with a major change that is incompatible with previous versions).
2. **Program.** Indication of the current program (00..99).
3. **Option Bytes (OPT).** Shows all option settings. See “Options” in the Alignments section for a detailed description. Three codes are available.
4. **Geometry (GEO).** See Alignments section for a detailed description.
5. **Hotel mode.** Used to set the TV in hotel mode.
6. **Automatic Gain Control (AGC).** Used to adjust the AGC (00..31). Fixed value =16.

How to navigate

- In the Service Menu, select menu items with the CURSOR UP/DOWN keys on the remote control transmitter. The selected item will be highlighted.
- With the CURSOR LEFT/RIGHT keys, it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to exit

When you press the MENU key in while in a the main service menu, you will return to the normal user mode.

5.2.2 Hotel Mode

Purpose

Installation is omitted in Hotel Mode. You cannot search any channel when the Hotel Mode is activated. Volume level cannot be increased higher then a previous defined level.

Specification

- Hotel Mode is activated by toggling the mode to on in the Service Menu with the CURSOR LEFT/RIGHT keys.
- The maximum volume level is set with the CURSOR LEFT/RIGHT keys.

5.3 Problems and Solving Tips

5.3.1 Picture Problems

Note: The problems described below are all related to the TV settings. The procedures used to change the value (or status) of the different settings are described.

Picture too dark or too bright

1. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
2. In the normal user menu, use the CURSOR UP/DOWN keys (if necessary) to highlight the PICTURE sub menu.
3. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
4. Use the CURSOR UP/DOWN keys (if necessary) to select BRIGHTNESS.
5. Press the CURSOR LEFT/RIGHT keys to increase or decrease the BRIGHTNESS value.
6. Use the CURSOR UP/DOWN keys to select CONTRAST.
7. Press the CURSOR LEFT/RIGHT keys to increase or decrease the CONTRAST value.
8. Use the CURSOR UP/DOWN keys to select STORE.

9. Press the CURSOR LEFT/RIGHT keys to store the settings.
10. Press the MENU button on the remote control transmitter twice to exit the user menu.

Snowy picture

- Antenna not connected. Connect the antenna.
- No antenna signal or bad antenna signal. Connect a proper antenna signal.
- The tuner is faulty (in this case line 2, the Error Buffer line, will contain error number 10). Check the tuner and replace/repair the tuner if necessary.

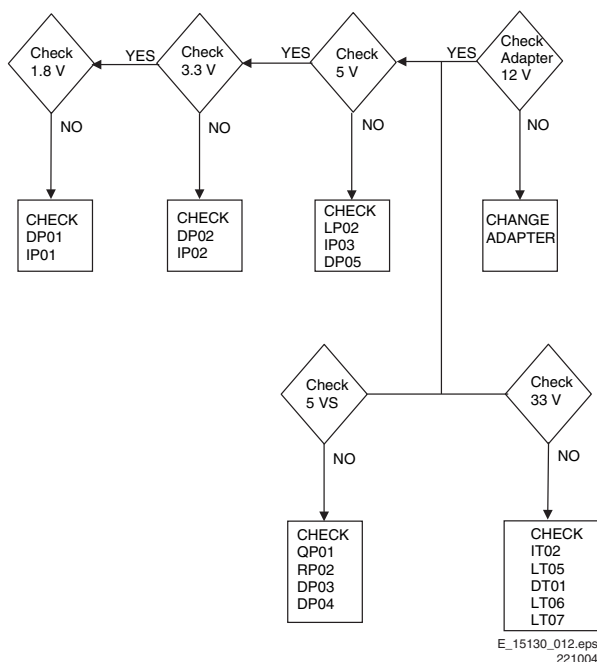
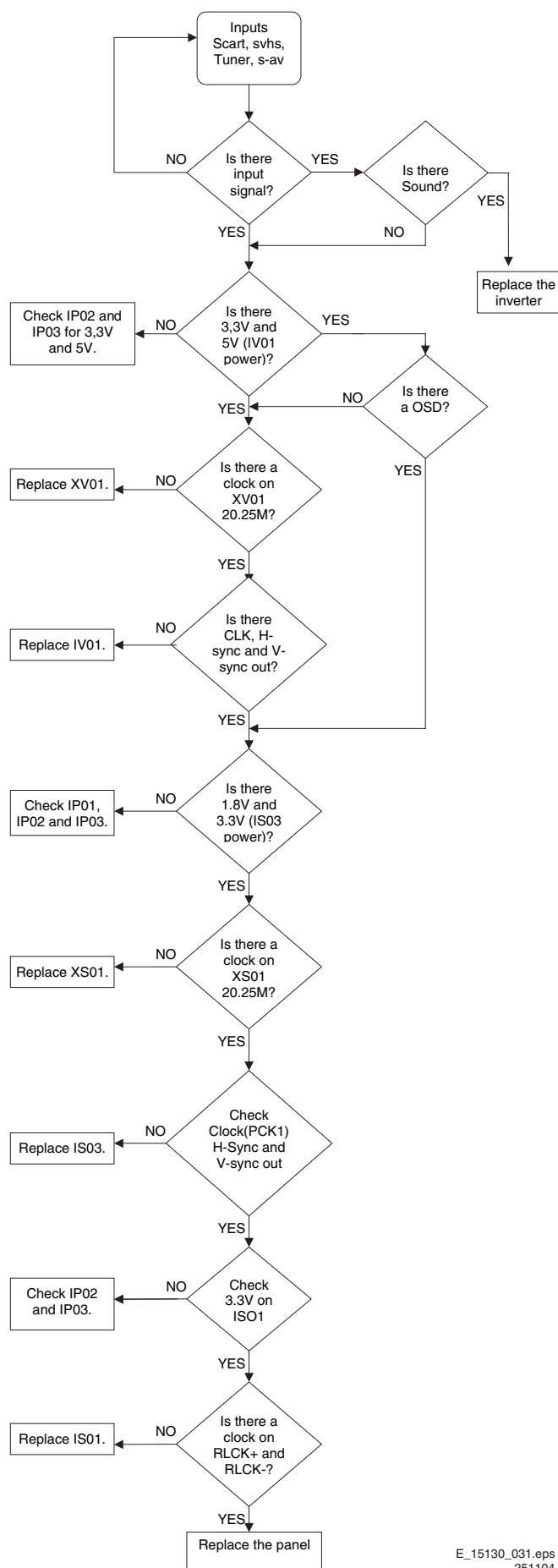
Black and white picture

1. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
2. In the normal user menu, use the CURSOR UP/DOWN keys (if necessary) to highlight the PICTURE sub menu.
3. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
4. Use the CURSOR UP/DOWN keys (if necessary) to select COLOUR.
5. Press the CURSOR LEFT/RIGHT keys to increase or decrease the COLOR value.
6. Use the CURSOR UP/DOWN keys to select STORE.
7. Press the CURSOR LEFT/RIGHT keys to store the settings.
8. Press the MENU button on the remote control transmitter twice to exit the user menu.

5.4 Fault Finding and Repair Tips**Notes:**

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

Fault tracing regarding power supply errors can be done using the following Fault Tracing Diagram.

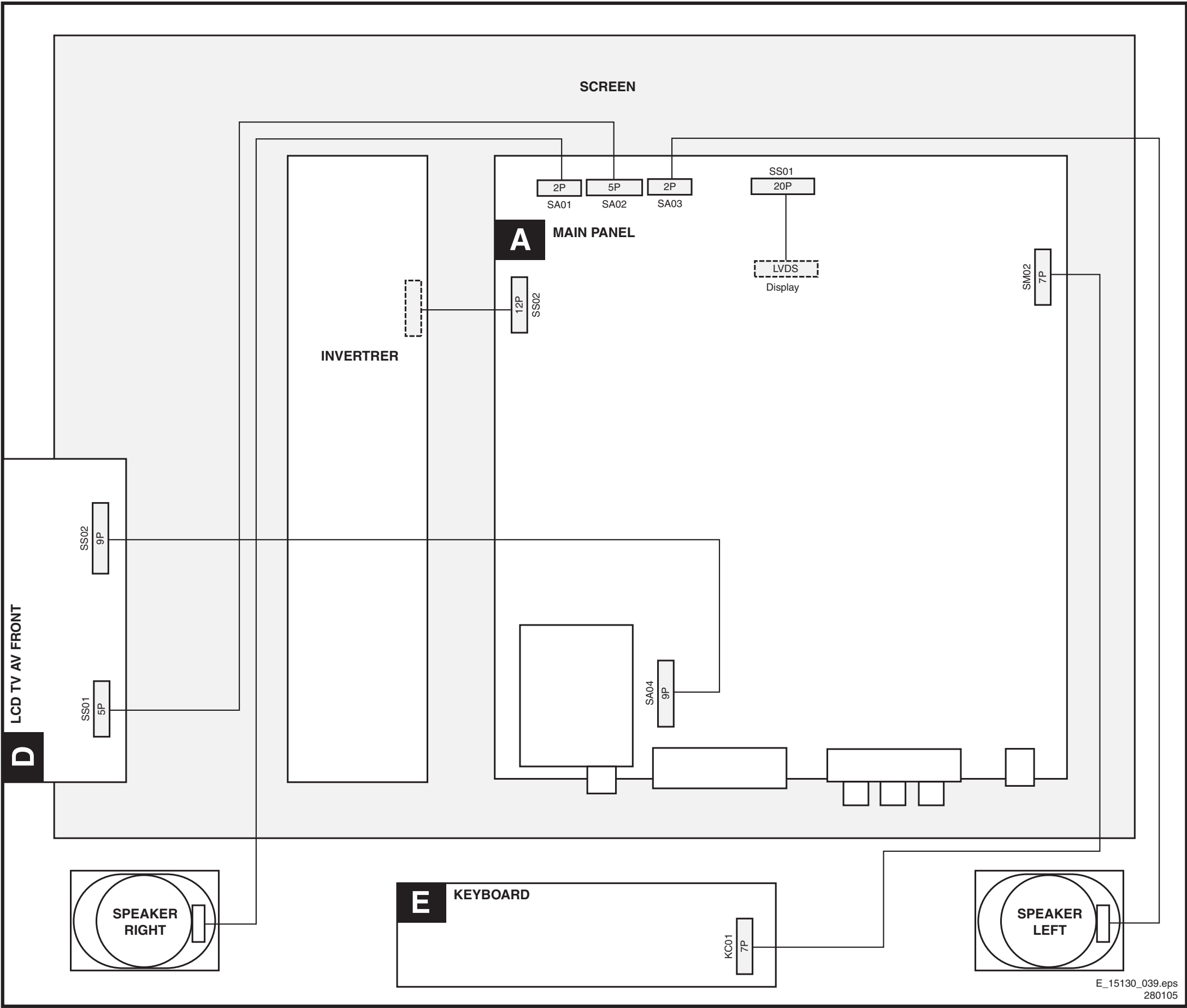
**Figure 5-2** Fault finding diagram for power supply errors**Figure 5-3** Fault finding diagram for display errors

Personal Notes:

6. Block Diagrams, Test Point Overviews, and Waveforms

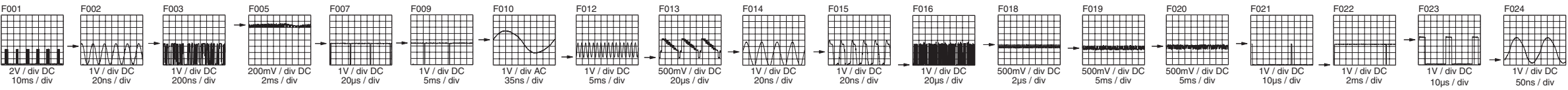
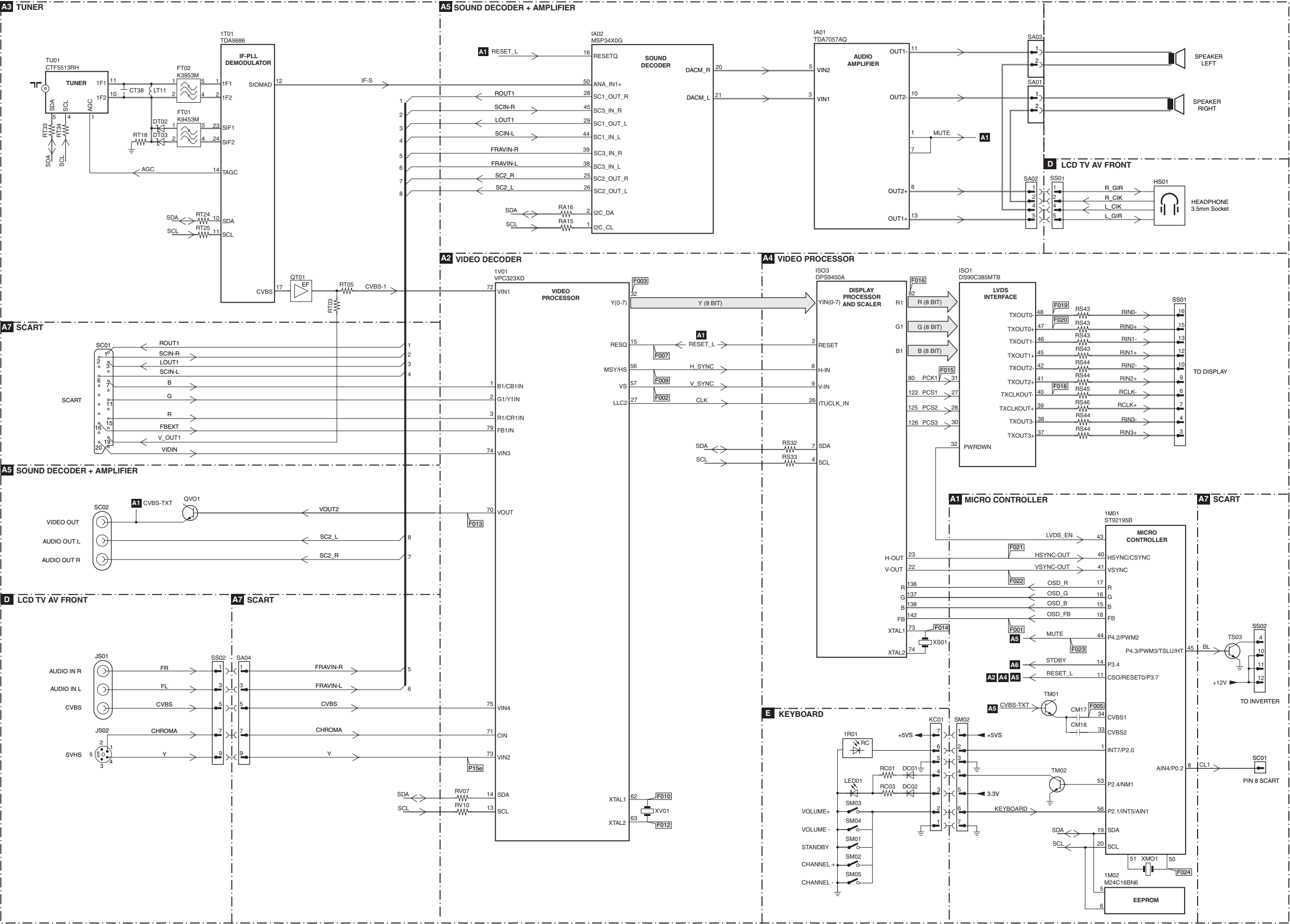
Wiring Diagram

WIRING



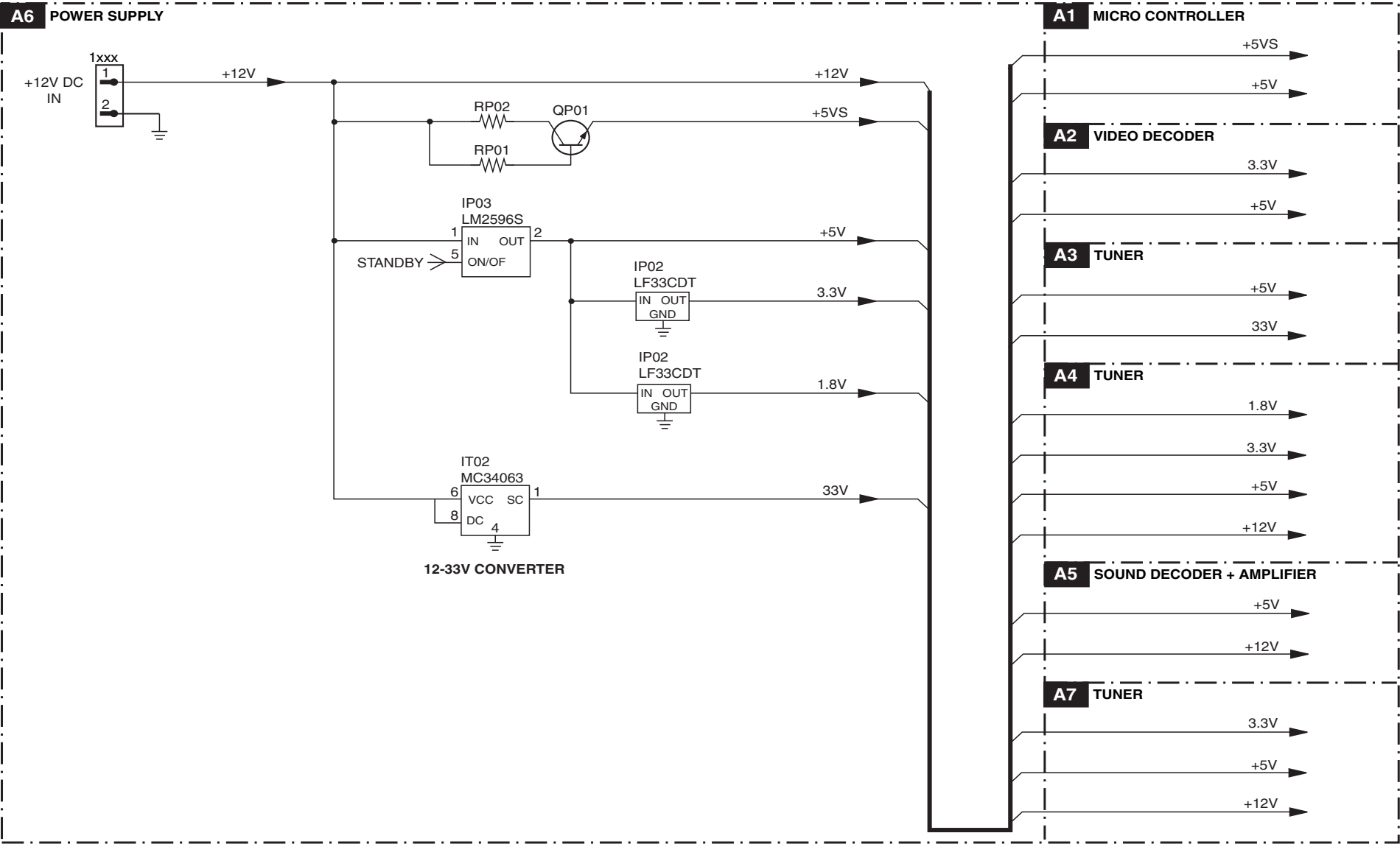
Block Diagram Video, Audio, and Control

Video Audio Control



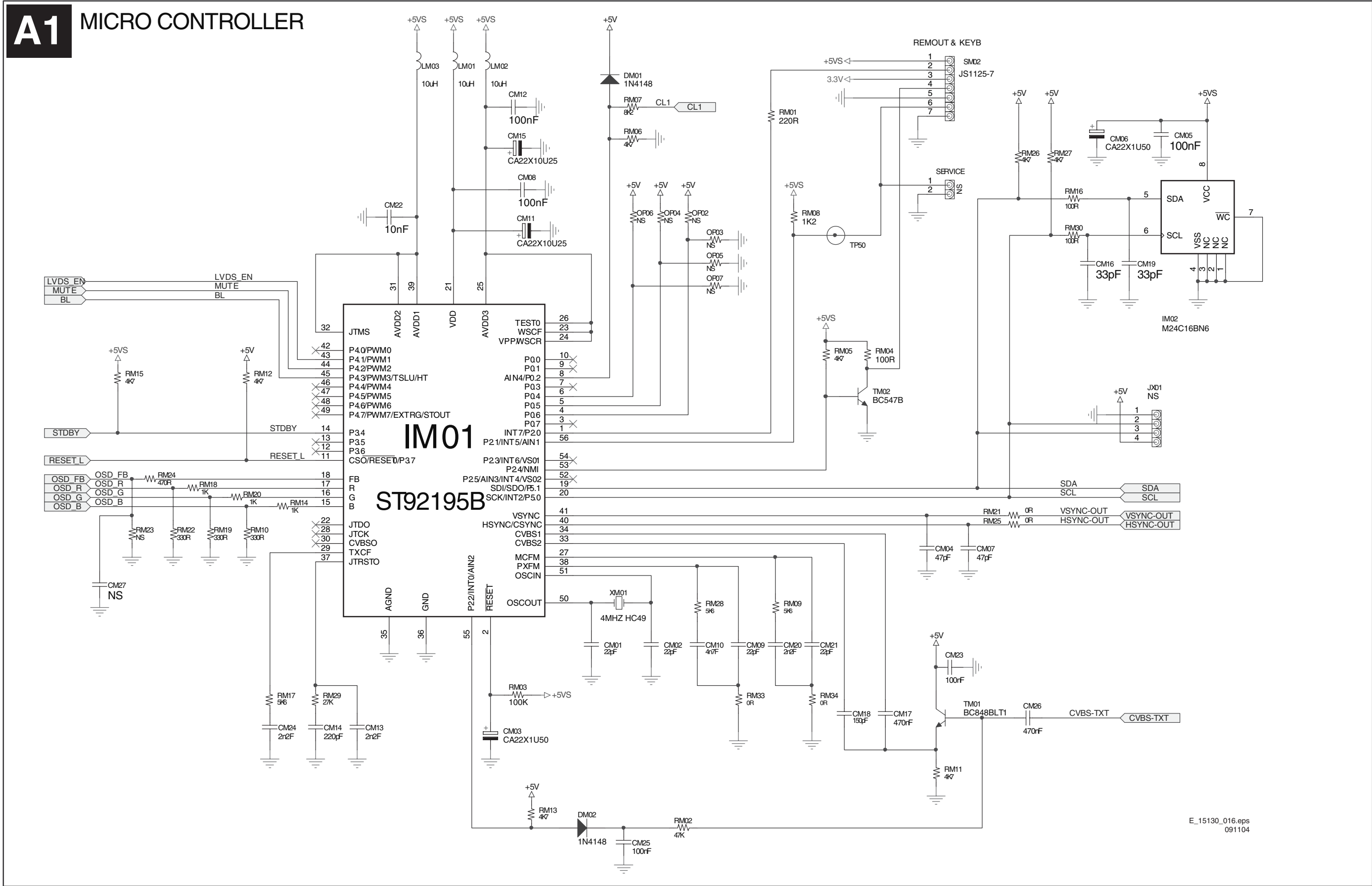
I²C Diagram

SUPPLY



7. Circuit Diagrams and PWB Layouts

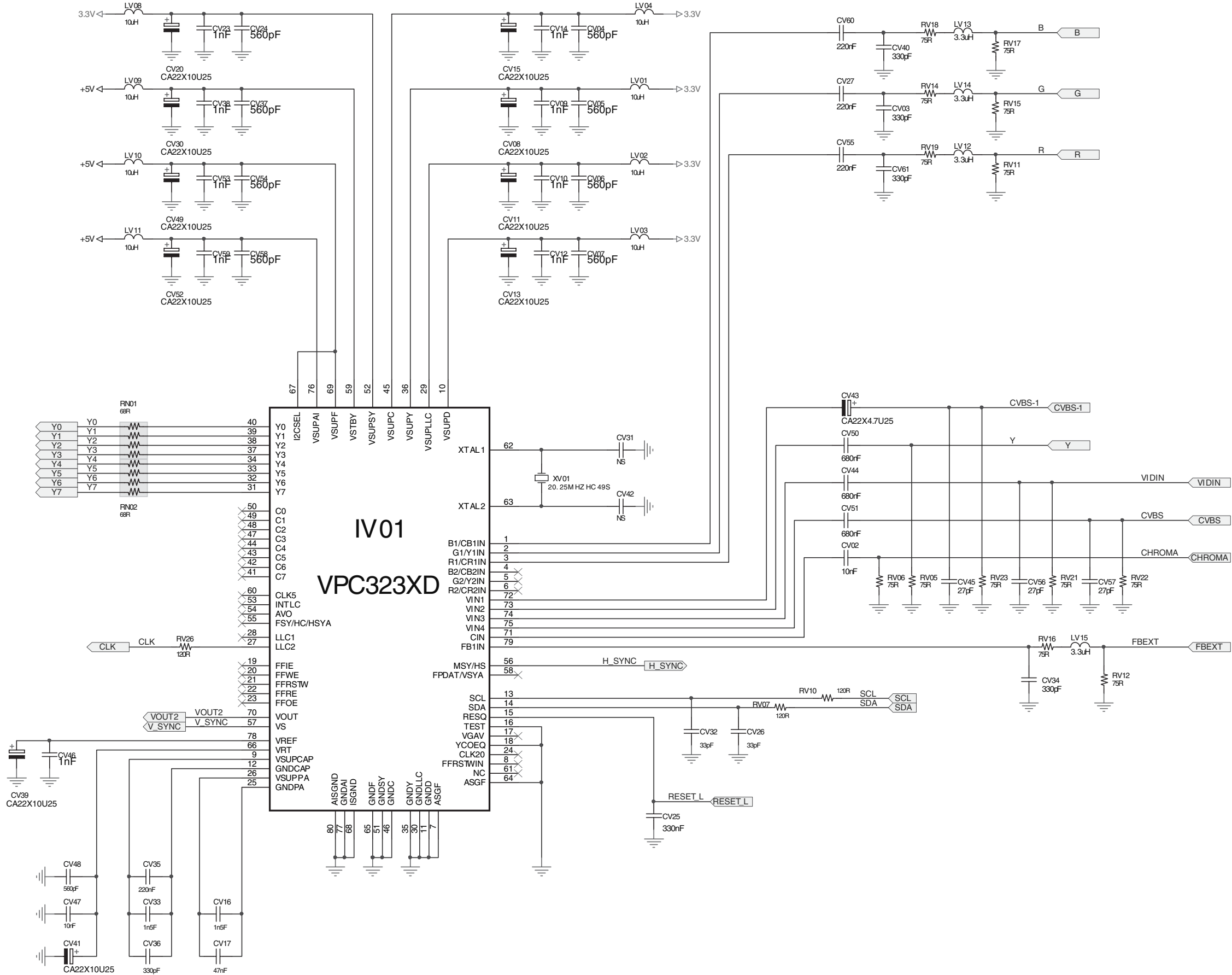
Main Panel: Micro Controller



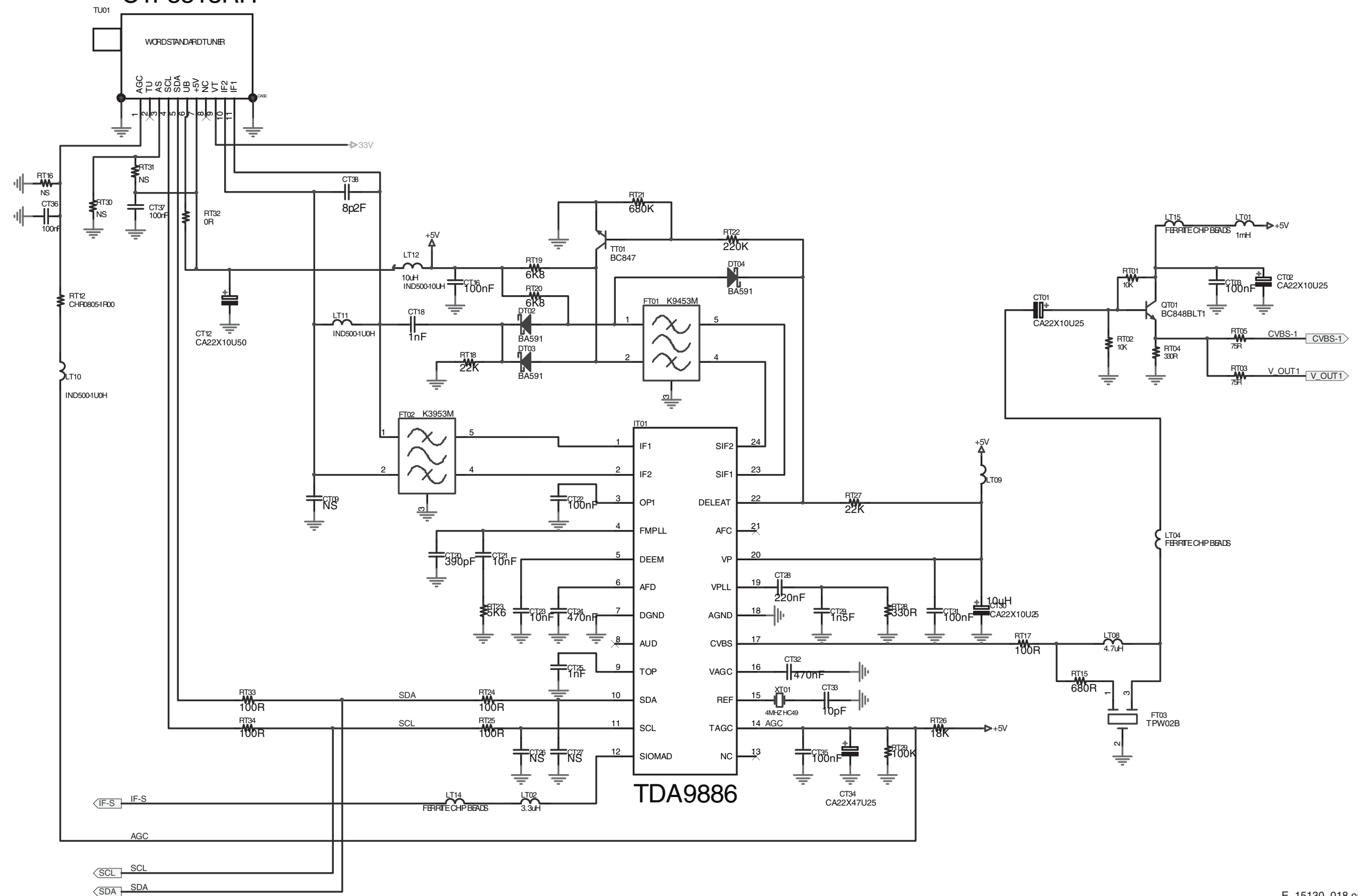
Main Panel: Video Decoder

A2

VIDEO DECODER



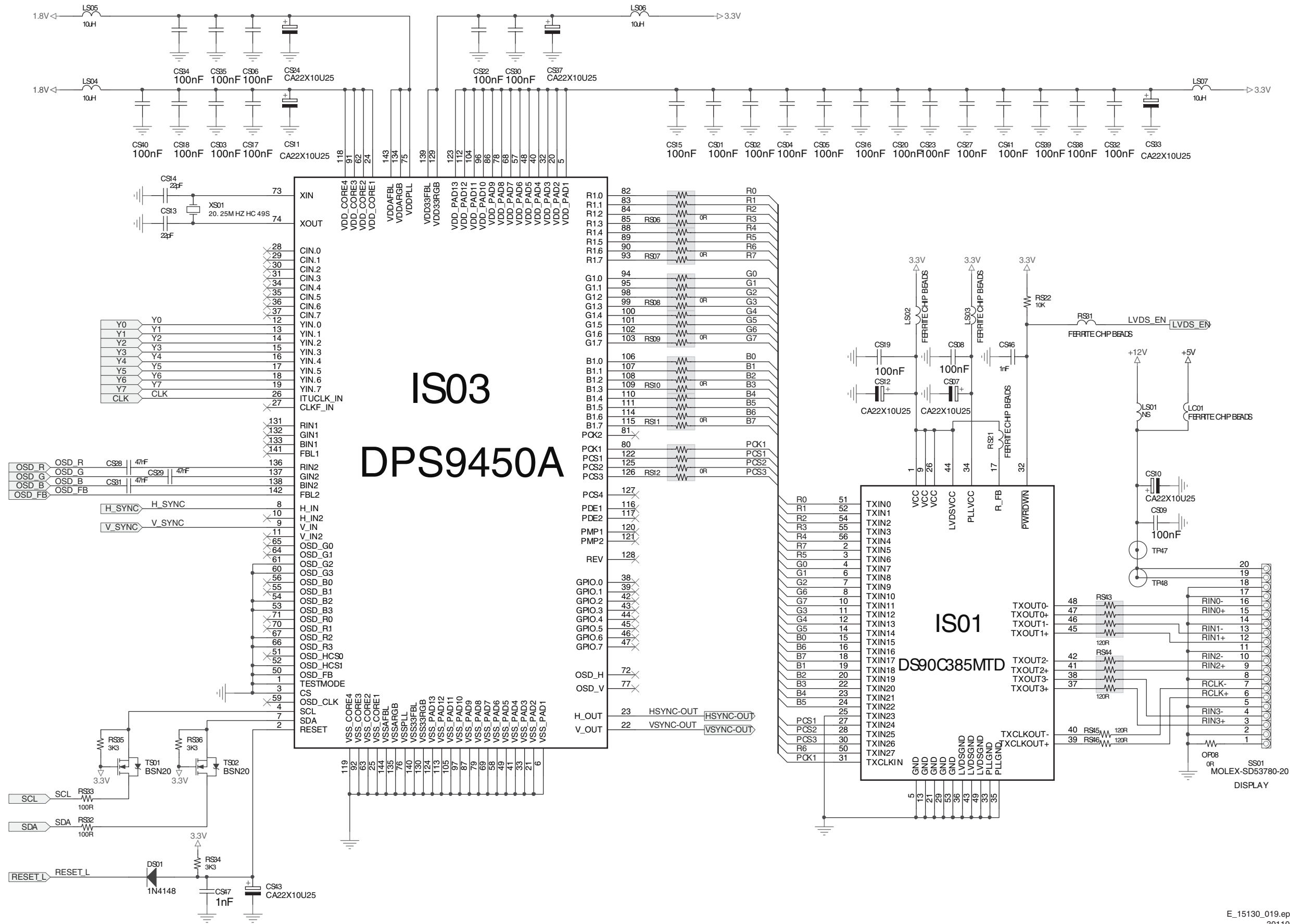
Main Panel: Tuner

A3**TUNER****CTF5513RH**

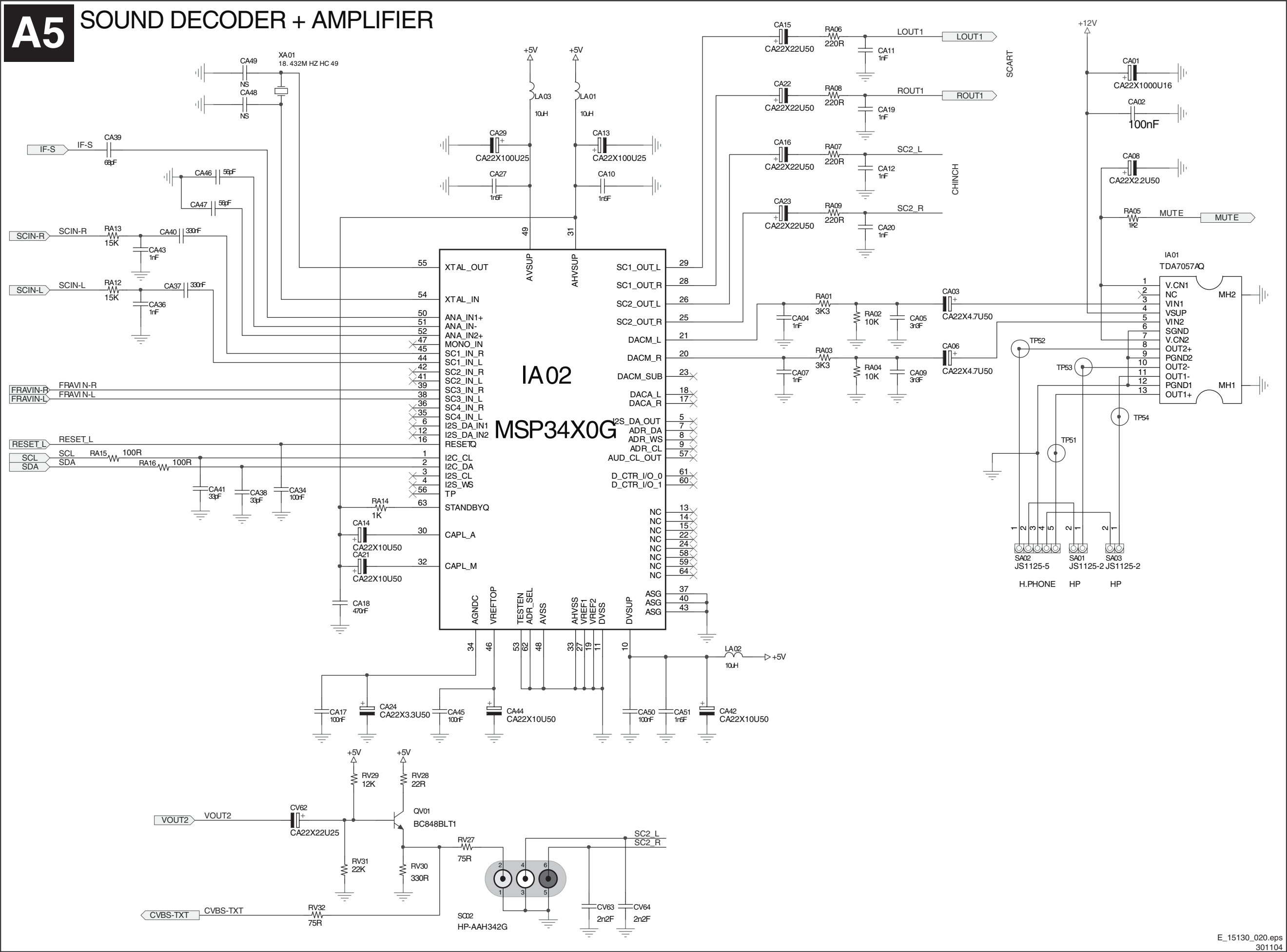
Main Panel: Video Processor

A4

VIDEO PROCESSOR

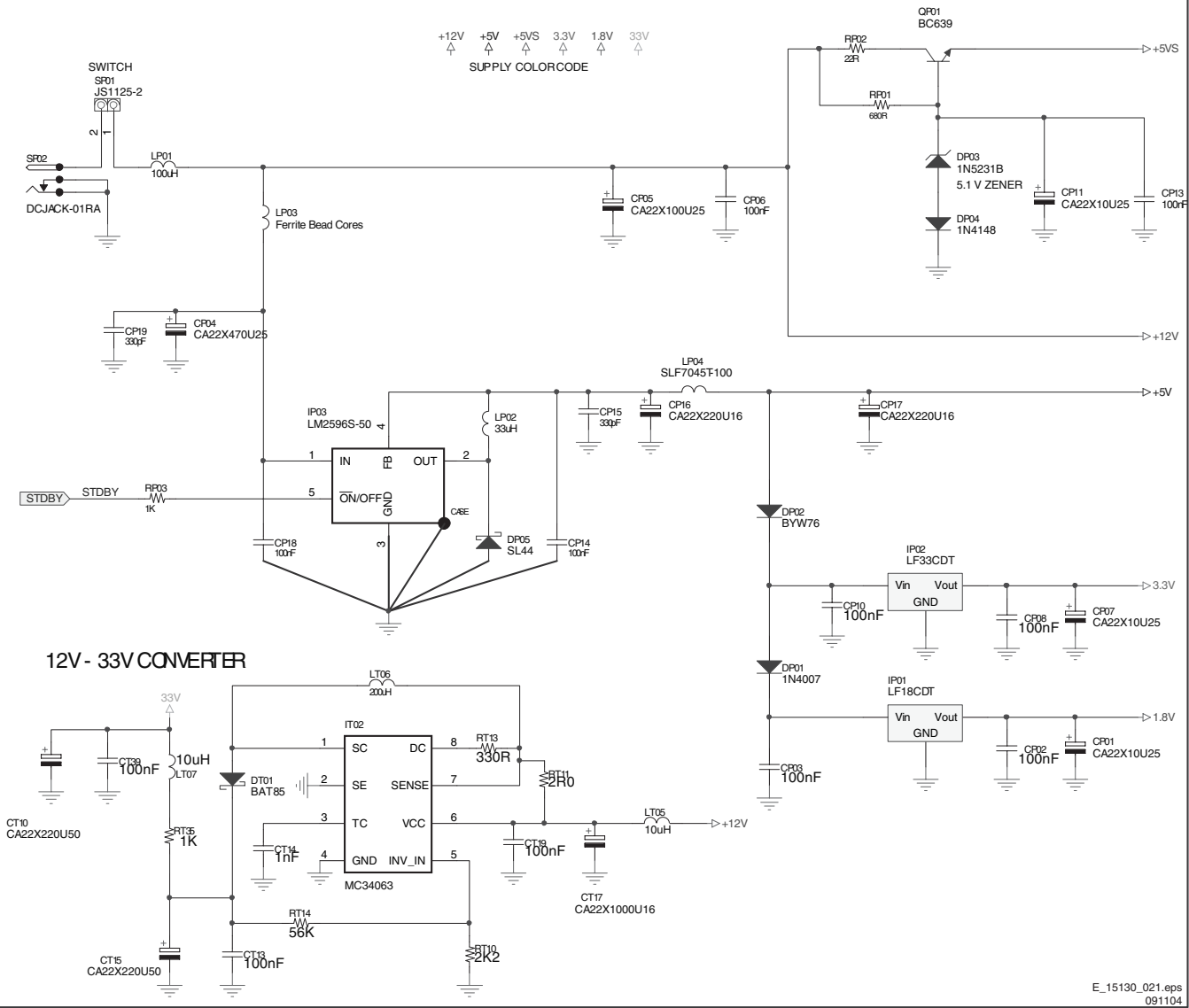


Main Panel: Sound Decoder + Amplifier



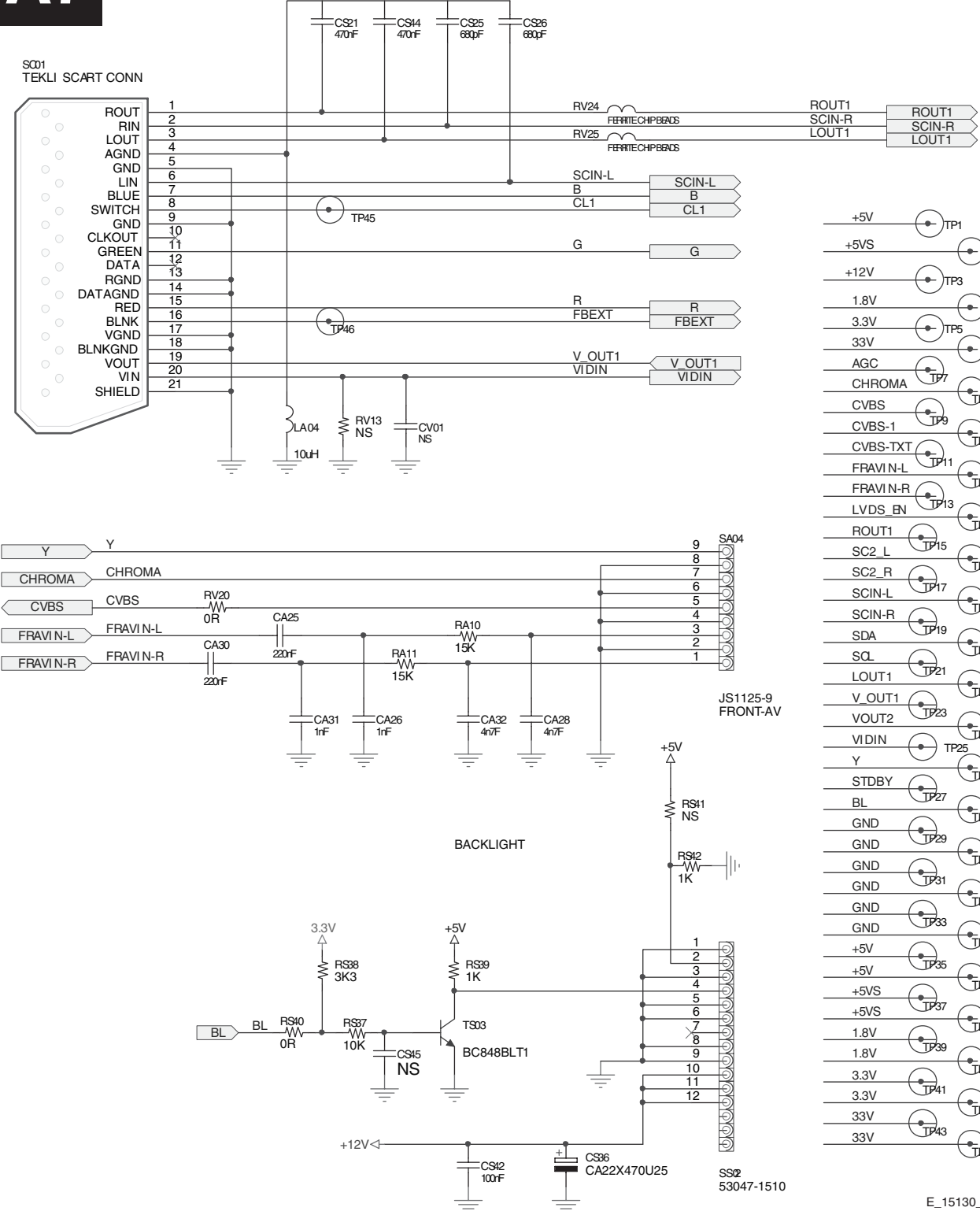
Main Panel: Power Supply

A6 POWER SUPPLY



Main Panel: SCART

A7 SCART

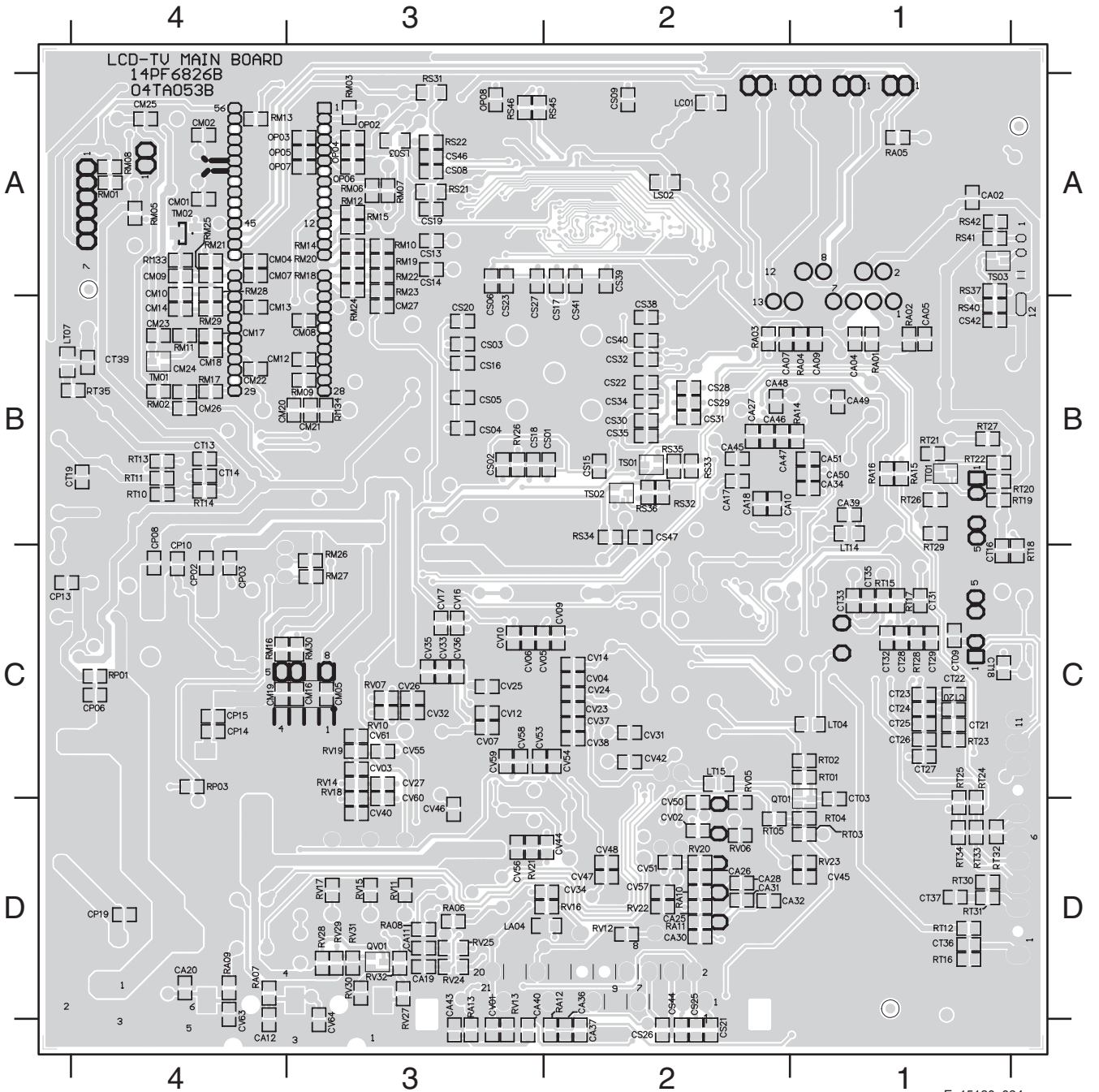
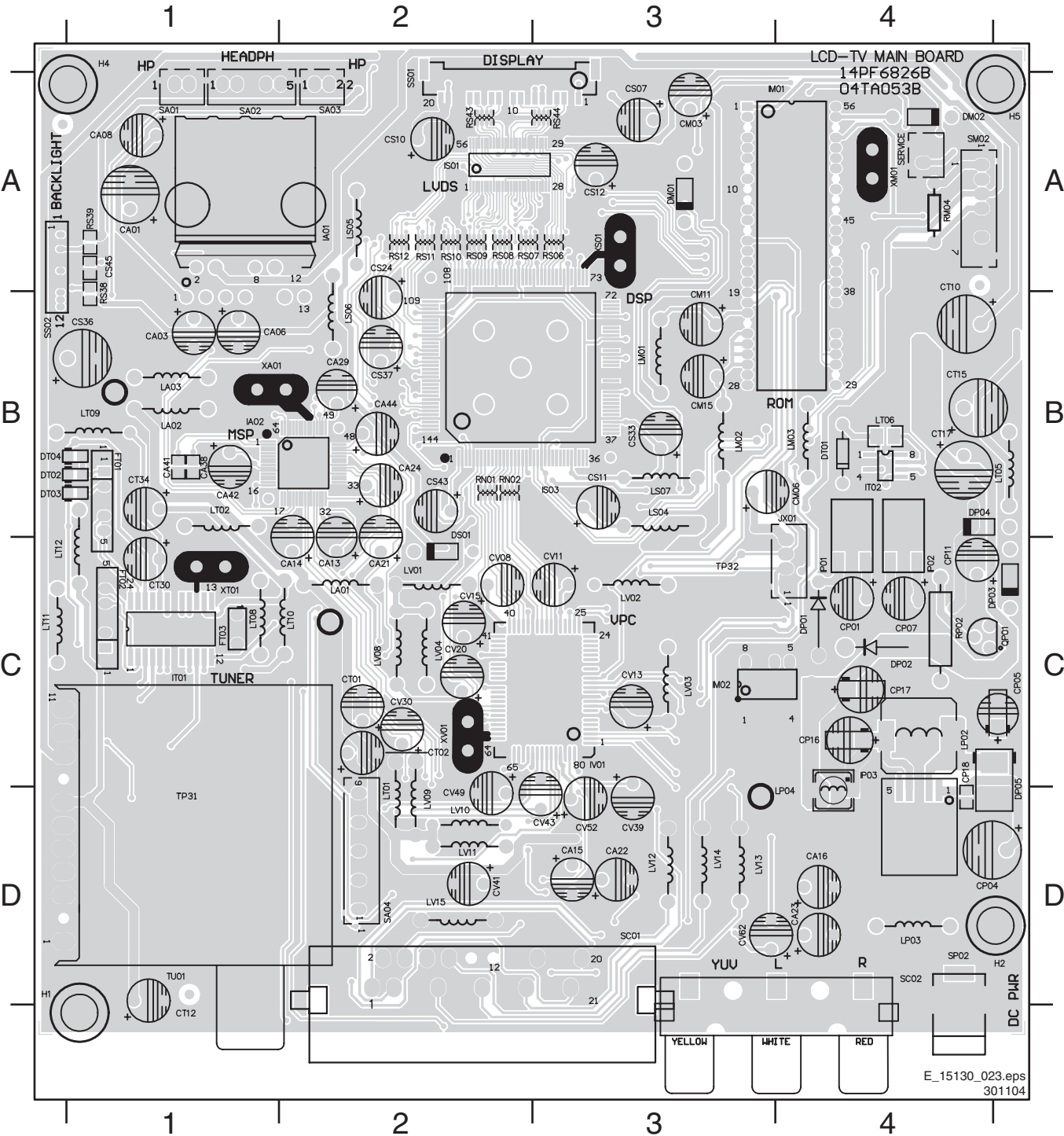


Layout Main Panel (Top Side)

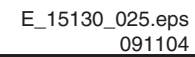
Layout Main Panel (Bottom Side)

CA01 A1	CA38 B1	CP16 C4	CS45 A1	CV20 C2	DP04 B4	IM02 C3	LM01 B3	LT06 B4	LV11 D2	RS09 A2	SC02 D3
CA03 B1	CA41 B1	CP17 C4	CT01 C2	CV30 C2	DP05 C4	IP01 B4	LM02 B3	LT08 C1	LV12 D3	RS10 A2	SERV A4
CA06 B1	CA42 B1	CP18 D4	CT02 C2	CV39 D3	DS01 C2	IP02 B4	LM03 B4	LT09 B1	LV13 D3	RS11 A2	SM02 A4
CA08 A1	CA44 B2	CP20 D4	CT10 B4	CV41 D2	DT01 B4	IP03 D4	LP02 C4	LT10 C1	LV14 D3	RS12 B2	SP02 D4
CA13 B2	CM03 A3	CS07 A3	CT12 D1	CV43 D3	DT02 B1	IS01 A2	LP03 D4	LT11 C1	LV15 D2	RS38 A1	SS01 A2
CA14 B2	CM06 B3	CS10 A2	CT15 B4	CV49 D2	DT03 B1	IS03 B2	LP04 D4	LT12 C1	QP01 C4	RS39 A1	SS02 A1
CA15 D3	CM11 B3	CS11 B3	CT17 B4	CV52 D3	DT04 B1	IT01 C1	LS04 B3	LV01 C2	RM04 A4	RS43 A2	TU01 D1
CA16 D4	CM15 B3	CS12 A3	CT30 C1	CV62 D3	FT01 B1	IT02 B4	LS05 A2	LV02 C3	RN01 C2	RS44 A3	XA01 B1
CA21 B2	CP01 C4	CS24 A3	CT34 B1	DM01 A3	FT02 C1	IV01 C3	LS06 B2	LV03 C3	RM02 C3	SA01 A1	XM01 A4
CA22 D3	CP04 D4	CS33 B3	CV08 C2	DM02 A4	FT03 C1	JX01 C4	LS07 B3	LV04 C2	RP02 C4	SA02 A1	XS01 A3
CA23 D4	CP05 C4	CS36 B1	CV11 C3	DP01 C4	IA01 A1	LA01 C2	LT01 D2	LV08 C2	RS06 A3	SA03 A2	XT01 C1
CA24 B2	CP07 C4	CS37 B2	CV13 C3	DP02 C4	IA02 B2	LA02 B1	LT02 B1	LV09 D2	RS07 A2	SA04 D2	XV01 C2
CA29 B2	CP11 C4	CS43 B2	CV15 C2	DP03 C4	IM01 A4	LA03 B1	LT05 B4	LV10 D2	RS08 A2	SC01 D2	

CA02 A1	CA47 B2	CM27 B3	CS18 B3	CT04 D1	CV03 C3	CV45 D1	LT15 C2	RM01 A4	RM34 B3	RT15 C1	RV13 D3
CA04 B1	CA48 B2	CM28 A3	CS19 A3	CT05 D1	CV04 C2	CV46 D3	OP02 A3	RM02 B4	RP01 C4	RT16 D1	RV14 C3
CA05 B1	CA49 B1	CM29 A3	CS20 B3	CT13 B4	CV05 C2	CV47 D2	OP03 A3	RM03 A3	RP03 C4	RT17 C1	RV15 D3
CA07 B2	CA50 B1	CM30 A3	CS21 D2	CT14 B4	CV06 C3	CV48 D2	OP04 A3	RM05 A4	RS05 A3	RT18 C1	RV16 D2
CA09 B1	CA51 B1	CM31 B4	CS22 B2	CT16 C1	CV07 C3	CV50 D2	OP05 A3	RM06 A3	RS13 D2	RT19 B1	RV17 D3
CA10 C2	CM01 A4	CP02 C4	CS23 A3	CT18 C1	CV09 C2	CV51 D2	OP06 A3	RM07 A3	RS22 A3	RT20 B1	RV18 C3
CA11 D3	CM02 A4	CP03 C4	CS25 D2	CT19 B4	CV10 C3	CV53 C3	OP07 A3	RM08 A4	RS32 B2	RT21 B1	RV19 C3
CA12 D4	CM04 A4	CP06 C4	CS26 D2	CT20 C1	CV12 C3	CV54 C2	OP08 A3	RM09 B3	RS33 B2	RT22 B1	RV20 D2
CA17 B2	CM05 C3	CP08 C4	CS27 A3	CT21 C1	CV14 C2	CV55 C3	QT01 C1	RM11 B4	RS34 B2	RT23 C1	RV21 D3
CA18 B1	CM07 A4	CP10 C4	CS28 B2	CT22 C1	CV16 C3	CV56 D3	QV01 D3	RM12 A3	RS35 B2	RT24 D1	RV22 D2
CA19 D3	CM08 B3	CP13 C4	CS29 B2	CT23 C1	CV17 C3	CV57 D2	RA01 B1	RM13 A4	RS36 B2	RT25 D1	RV23 D1
CA20 D4	CM09 A4	CP14 C4	CS30 B2	CT24 C1	CV23 C2	CV58 C3	RA02 B1	RM14 A3	RS37 A1	RT26 B1	RV26 B3
CA25 D2	CM10 A4	CP15 C4	CS31 B2	CT25 C1	CV24 C2	CV59 C3	RA03 B2	RM15 A3	RS40 B1	RT27 B1	RV27 D3
CA26 D2	CM12 B3	CP19 D4	CS32 B2	CT26 C1	CV25 C3	CV60 C3	RA04 B1	RM16 C4	RS41 A1	RT28 C1	RV28 D3
CA27 B2	CM13 B4	CS01 B2	CS34 B2	CT27 C1	CV26 C3	CV61 C3	RA05 A1	RM17 B4	RS42 A1	RT29 B1	RV29 D3
CA28 D2	CM14 B4	CS02 B3	CS35 B2	CT28 C1	CV27 C3	CV63 D4	RA06 D3	RM18 A3	RS45 A3	RT30 D1	RV30 D3
CA30 D2	CM16 C3	CS03 B3	CS38 B2	CT29 C1	CV31 C2	CV64 D3	RA07 D4	RM20 A3	RS46 A3	RT31 D1	RV31 D3
CA31 D2	CM17 B4	CS04 B3	CS39 A2	CT31 C1	CV32 C3	LA05 D3	RA08 D3	RM21 A4	RT01 C1	RT32 D1	RV32 B4
CA32 D2	CM18 B4	CS05 B3	CS40 B2	CT32 C1	CV33 C3	LA06 D3	RA09 D4	RM23 A3	RT02 C1	RT33 D1	TM01 B4
CA34 B1	CM19 C4	CS06 A3	CS41 A2	CT33 C1	CV34 D2	LS02 A2	RA10 D2	RM24 A3	RT03 D1	RT34 D1	TM02 A4
CA36 D2	CM20 B3	CS08 A3	CS42 B1	CT35 C1	CV35 C3	LS03 A3	RA11 D2	RM25 A4	RT04 D1	RT35 B4	TS01 B2
CA37 D2	CM21 B3	CS09 A2	CS44 D2	CT36 D1	CV36 C3	LS08 A3	RA12 D2	RM26 C3	RT05 D2	RV05 D2	TS02 B2
CA39 B1	CM22 B4	CS13 A3	CS46 A3	CT37 D1	CV37 C2	LS09 A2	RA13 D3	RM27 C3	RT10 B4	RV06 D2	TS03 A1
CA40 D3	CM23 B4	CS14 A3	CS47 B2	CT38 C1	CV38 C2	LS10 A3	RA14 B1	RM28 A4	RT11 B4	RV07 C3	TT01 B1
CA43 D3	CM24 B4	CS15 B2	CS48 A3	CT39 B4	CV40 D3	LT04 C1	RA15 B1	RM29 B4	RT12 D1	RV10 C3	
CA45 B2	CM25 A4	CS16 B3	CS49 A2	CV01 D3	CV42 C2	LT07 B4	RA16 B1	RM30 C3	RT13 B4	RV11 D3	
CA46 B2	CM26 B4	CS17 A2	CT03 C1	CV02 D2	CV44 D2	LT14 B1	RA17 D2	RM33 A4	RT14 B4	RV12 D2	

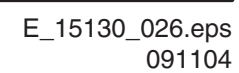


LCD TV AV FRONT



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301104

KEYBOARD



E_15130_038.eps
301104

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments

General: The Service Mode is described in chapter 5. Menu navigation is done with the cursor Up, Down, Left or Right keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Allow the set to warm up for approximately 10 minutes.
- Mains voltage and frequency: 100-240 V_{AC} / 50/60 Hz.
- Test probe: R_i > 10 Mohm; C_i < 2.5 pF.

8.2 Hardware Alignments

There are no hardware alignments foreseen for the LCD-TV.

8.3 Software Alignments

With the software alignments of the Service Mode the geometry can be aligned.

To store the data: Use the RC button MENU to switch to the main menu and next, switch to 'Stand-by' mode.

8.3.1 Options Menu

OPT.		
0		
7	T B1	0
6	T B2	0
5	Sec.	1
4	Empty	1
3	E/W	1
2	No. S.T	0
1	Wel.	1
0	Childo.	1

E_15130_013.eps
221004

Figure 8-1 Options Menu

The option menu is used to control the presence/absence of certain features and to set some options.

How to change an Option Byte

An Option Byte represents a number of different options. Changing these bytes directly makes it possible to set all options very fast. All options are controlled via three option bytes. Select the option byte (OPT0.. OPT2) with the Menu Up/ Down keys, and enter the new value.

To change any bit value of any option, just press the digit keys (0-7) on the RC. For example; to change the bit value (0 or 1) of the fifth option "Sec.", simply press the corresponding digit "5" on the RC and make the desired change. The bit value will change from 0 to 1 and 1 to 0 respectively on each pressing of button 5.

Leaving the OPTION submenu (with the MENU button) saves the changes in the Option Byte settings. Some changes will only take effect after the set has been switched "off" and "on".

Table 8-1 Option values

Option Byte 0	Description value 0	Description value 1
Bit 0	Child lock disable	Child lock enable
Bit 1	Welcome menu disable	Welcome menu enable
Bit 2	"No Signal" timer off	"No Signal" timer on
Bit 3	Not used	Not used
Bit 4	Not used	Not used
Bit 5	France selection disable	France selection enable
Bit 6	Main tuner selection bit0	Main tuner selection bit0
Bit 7	Main tuner selection bit1	Main tuner selection bit1

Main tuner selection: 00: fixed value. No other tuners used

Option byte 1 and option byte 2 are empty.

8.3.2 Geometry Menu

GEO	
H.ST	0022
H.SP	0640
V.ST	0063
V.SP	0864

E_15130_014.eps
221004

Figure 8-2 Geometry Menu

If the GEOMETRY option in the Service menu is highlighted and the LEFT/RIGHT button on the RC are pressed, the geometry menu will be displayed.

Table 8-2 Geometry items

Menu item	Description	Possible value	Default value
H.ST	Horizontal start	0000...0864	0022
H.SP	Horizontal stop	0000...0864	0640
V.ST	Vertical start	0000...0864	0063
V.SP	Vertical stop	0000...0864	0864

It is possible to adjust the start and stop points of the screen by adjusting the values.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

- 9.1 Introduction
- 9.2 Block Diagram
- 9.3 Video processing
- 9.4 Microprocessor
- 9.5 Audio processing
- 9.6 Abbreviation list
- 9.7 IC Data Sheets

Note:

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

This chassis contains complete new designed main board, including the following new components:

- ST92195B (Microcontroller and TXT Decoder): is a new controller IC with internal ROM and RAM memories, TXT decoder and On Screen Display (OSD) functionality.

The chassis consists not only of the main board with all the functionality and a part of the I/O connectors.

There are also three peripheral panels: an inverter panel, a side a/v panel, and a remote and keyboard panel. These peripheral panels are considered to be replaced when defective. Assy's are mentioned in partslist.

9.2 Block Diagram

For the block diagram see chapter 6 "Wiring Diagram, Block Diagrams, and Overviews".

The Tuner is a PLL tuner and delivers the IF-signal, via audio & video SAW-filters, to the VPC3230D Video Processor.

Several I/O connectors are available:

- one SCART (fully equipped),
- Video CVBS out and cinch audio L/R out.
- S-video, CVBS video, and audio L/R input.
- Headphone output.

All these video in and outputs are connected to the Video Processor. The audio signals are processed by the MSP3410G Sound processor.

Attached to the Video Processor is the DPS9450A Matrix Panels Display Processor and Scaler.

The incoming 16 bit signals are processed and combined with the On Screen Display (OSD) and Teletext (TXT) information from the Microprocessor.

The microprocessor, called OTC (OSD, Teletext and Control) takes care of the analogue TXT input- and output processing. The OTC, ROM, and RAM are supplied with 5V, which is derived from the +12V. The internal ROM is used to store the set software, the RAM contains the settings and the TDSRAM is used for storing the Teletext pages.

The combined picture information is sent to the LCD display by the DS90C385 programmable LVDS transmitter, providing a perfect input signal in the desired format.

The sound part is built around the MSP3410G (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Dolby decoding is also done by the MSP.

Amplification is done via a integrated power amplifier IC, the TDA7057AQ.

9.3 Video processing

The key components of the video processing are the following ICs:

- VPC3230D
- DPS9450A
- DS90C385MTD

9.3.1 VPC3230D

The VPC3230D is a high-quality, single chip video front-end. The main features are:

- high-performance adaptive 4H comb filter Y/C separator with adjustable vertical peaking
- multi-standard colour decoder PAL/NTSC/SECAM, including all substandards
- two RGB/YCrCb component inputs, one Fast Blank input
- integrated high-quality A/D convertors and associated clamp and AGC circuits
- multi-standard sync processing
- linear horizontal scaling (0,25....4), as well as non-linear horizontal scaling (Panorama vision)
- PAL+ preprocessing
- control interface for external field memory
- I2C-bus interface

9.3.2 DPS9450A

The DPS is a single-chip digital display processor and scaler specially designed for TV sets with matrix displays.

There are three main functional parts:

- video input processing
- scaling
- display processing

The video input processing part handles both the analog and digital input. After the channel mixer, the signal is processed by the scaler, where a linear horizontal and vertical scaling is done. Also non-linear horizontal scaling, and de-interlacing is possible. In the display processing part, the picture is enhanced, and the digital OSD is added to the picture.

The chip is also equipped with an I2C interface

9.3.3 DS90C385MTD

The DS90C385 transmitter converts 28 bits of CMOS/TTL data into four LVDS (Low Voltage Differential Signalling) data streams. A phase-locked transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. Every cycle of the transmit clock, 28 bits of input data are sampled and transmitted. At a transmit clock frequency of 85 MHz. 24 bits of RGB data and 3 bits of LCD timing and control data are transmitted at a rate of 595 Mbps per LVDS data channel. Using the 85 MHz clock, the data throughput is 297.5 Mbytes/sec.

The transmitter can be programmed for Rising edge strobe or Falling edge strobe through a dedicated pin.

A Rising edge or Falling edge strobe transmitter will interoperate with a Falling edge strobe Receiver without any translation logic.

9.4 Microprocessor

The Microprocessor IC (ST92195B) has two main functions: microcontroller and teletext decoder.

9.4.1 Microcontroller

The microcontroller is based on a ST9+ Core, consisting of the Central Processing Unit (CPU), the Register File and the Interrupt controller. Up to 28 I/O lines (five I/O ports) can be configured to provide timing, status signals, timer and output, analog inputs, external interrupts and serial or parallel I/O. The On Screen Display (OSD) module provides a human interface with up to 26 lines of max. 80 characters, each 10x10 dot. Four character sizes are supported, as well as additional foreground and background colours.

The intelligent on-chip peripherals offload the ST9 core from I/O and data management processing tasks to get the maximum use of core resources.

The microcontroller supports several Power Saving Modes.

9.4.2 TeleteXT decoder

The Teletext Unit includes a Data Slicer, and a special Acquisition Unit.

The internal Teletext and Display storage RAM can be use to store Teletext pages as well as Display parameters.

9.5 Audio processing

The Multi standard Sound Processor IC (MSP3410G) covers the full TV sound processing, starting with analog sound IF-signal down to processed analog AF-out.

It supports not only NICAM and FM Stereo, but also the AM-SECAM L standard.

DBX noise reduction is available, or alternatively MICRONAS Noise Reduction is performed.

Furthermore, the sound processor has built-in automatic functions:

- actual sound standard detection
- mono/stereo/bilingual switching
- Automatic Carrier Mute function
- Automatic Volume Correction

Enhancement of the sound is done by a build in 5-band graphic equalizer and also spatial effect is available.

The loudspeaker/headphone channel has separate volume, balance, bass, treble and loudness settings.

9.6 Abbreviation list

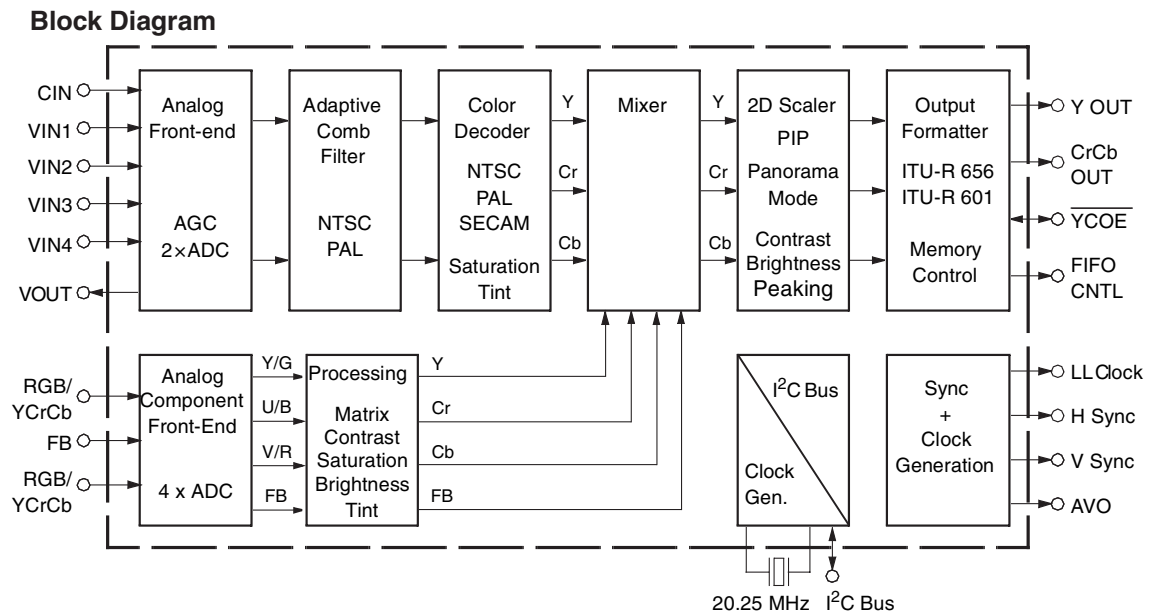
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature-box
AM	Amplitude Modulation
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
AR	Aspect Ratio: 4 by 3 or 16 by 9
AUDIO_L	Audio Left
AUDIO_R	Audio Right
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
BG	System B and G
CL	Constant Level: audio output to connect with an external amplifier
CRT	Cathode Ray Tube or picture tube
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DFU	Direction For Use: description for the end user
DNR	Digital Noise Reduction: noise reduction feature of the box
DPL	Dolby ProLogic
DSP	Digital Signal Processing
DVD	Digital Versatile Disc
DYN-FASE-COR	Dynamic phase correction, to correct the phase of the H-drive
EHT	Extra High Tension
EHT-INFO	Extra High Tension information, used for contrast reduction, vertical and horizontal amplitude correction, beam current protection, and flash detection.
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NextView)
EW	East West, related to horizontal deflection of the set
EW-DRIVE	The drive signal for the EW-transistor
EXT	External (source), entering the set via SCART or via cinches
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-PIP	The fast blanking signal for PIP
FBL-TXT	The fast blanking signal for TXT. It has a higher priority than FBL-PIP
FLASH	Flash memory
FM	Field Memory or Frequency Modulation
GND-DRIVE	A separate ground for the line drive towards the line driver
HA50	Horizontal Acquisition 1fh: horizontal sync pulse coming out of the HIP
HD100	Horizontal Drive 2fh: horizontal sync pulse coming out of the feature-box
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection
HP	Headphone
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of

	lines. The fields are written in 'pairs', causing line flicker
Last Status	The settings last chosen by the customer, read, and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customers wishes
LDP	Line Deflection Protection signal, derived from the EW-current and voltage
LED	Light Emitting Diode
LINE DRIVE	Line drive signal (for the Line transistor)
LNA	Low Noise Adapter
LORE	LOcal REgression based noise reduction
LSP	Large signal panel
MSP	Multi-standard Sound Processor: ITT sound decoder of EM5E
MUTE	Mute-Line
NC	Not Connected
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
O/C	Open Circuit
ON/OFF LED	On/Off control signal for the LED
OSD	On Screen Display
OTC	On screen display Teletext and Control
PCB	Printed Circuit Board
PIP	Picture In Picture
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PTP	Picture Tube Panel
RAM	Random Access Memory
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	Reset signal
RGB-PIP	RGB-input for PIP
RGB-TXT	RGB-input for Teletext and OSD
RGB-VC	RGB-input to the Picture Tube Panel
ROM	Read Only Memory
S/C	Short Circuit
SCL-F	Clock signal on fast I2C bus
SD	Standard Definition
SDA-F	Data signal on fast I2C bus
SIF	Sound Intermediate Frequency
SNERT	Synchronous No parity Eight bit Reception and Transmit
SSB	Small Signal Board
STBY	Standby
SW	Subwoofer
SWAN	Spatial Weighted Averaging Noise reduction
TXT	Teletext
TXT-DS	Teletext Dual Screen
uP	Microprocessor
VA50	Vertical Acquisition 1Fh
VBAT	Main supply for deflection (mostly 141 V)
VDS	Virtual Dolby Surround
VL	Variable Level out: processed audio output towards external amplifier
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
X-RAY-PROT	A protection signal for too high X-ray radiation
XTAL	Quartz crystal

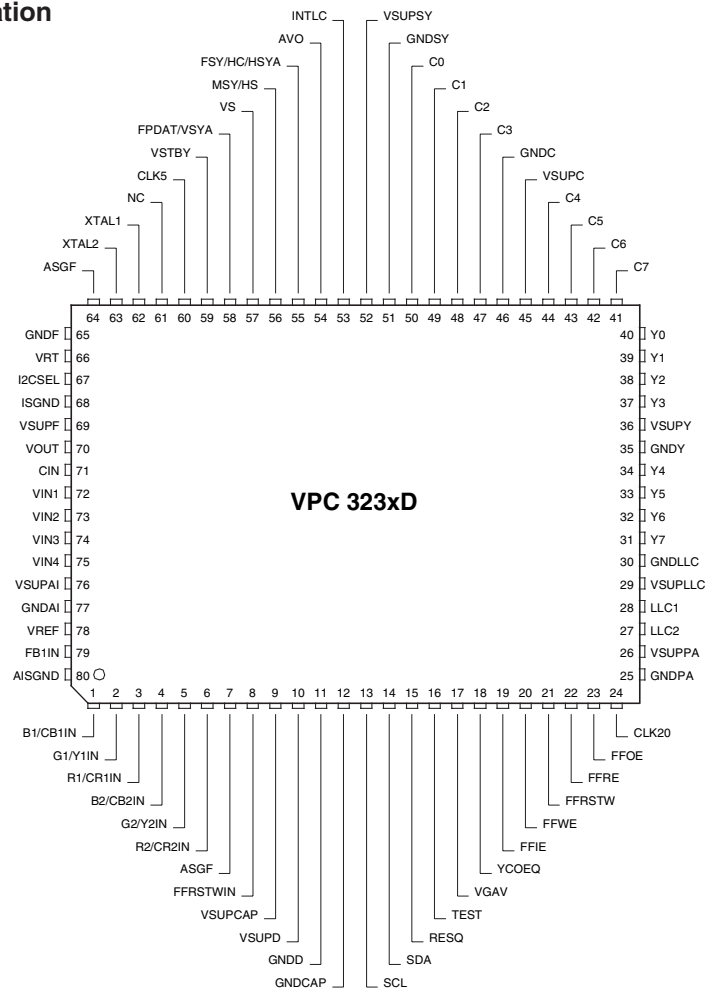
9.7 IC Data Sheets

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a 'black box' in the electrical diagrams (with the exception of 'memory' and 'logic' ICs).

9.7.1 Diagram VPC3230D



Pin Configuration

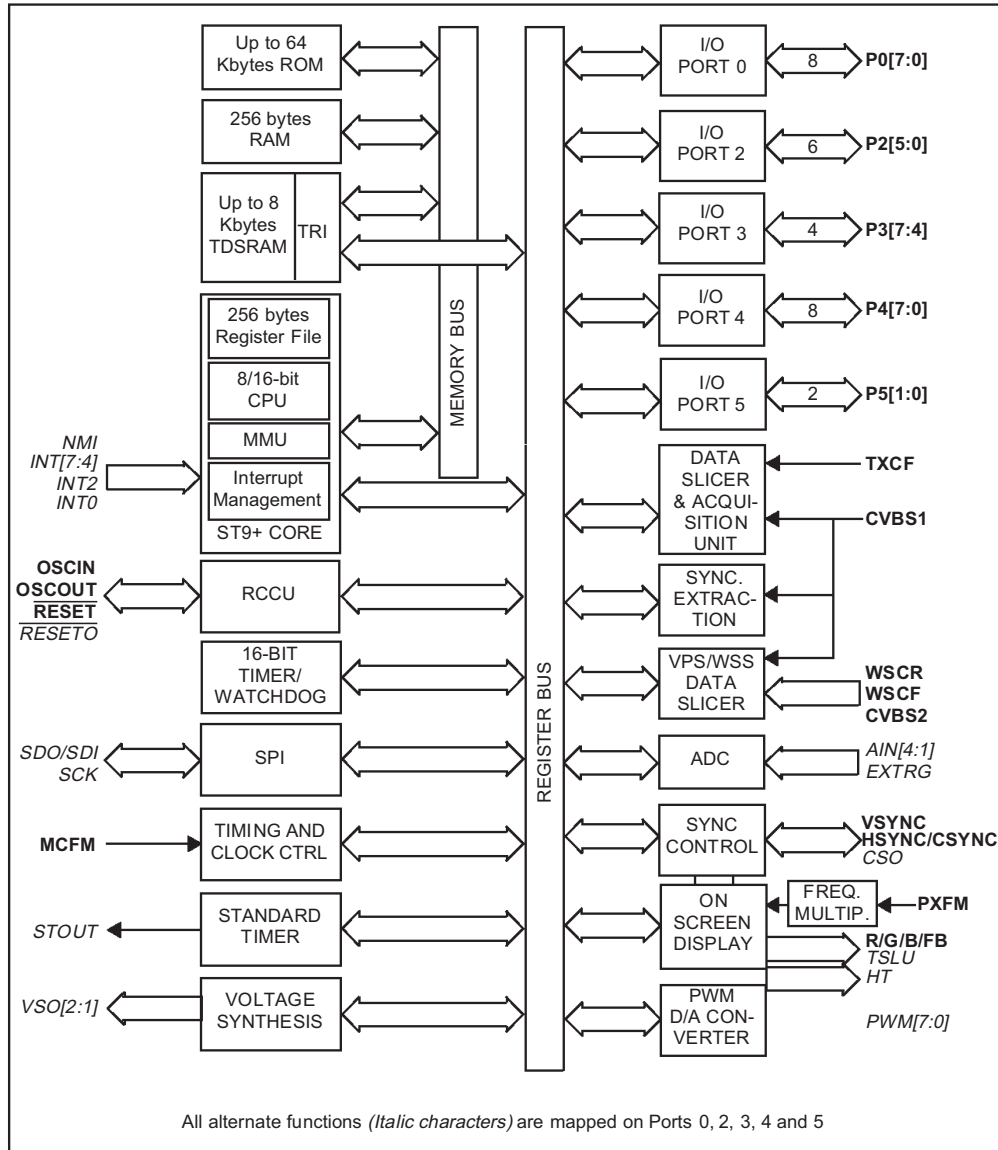


E_15130_032.eps
261104

Figure 9-1 Internal Block Diagram and Pin Configuration VPC3230D

9.7.2 Diagram ST92195B

Block Diagram



Pin Configuration

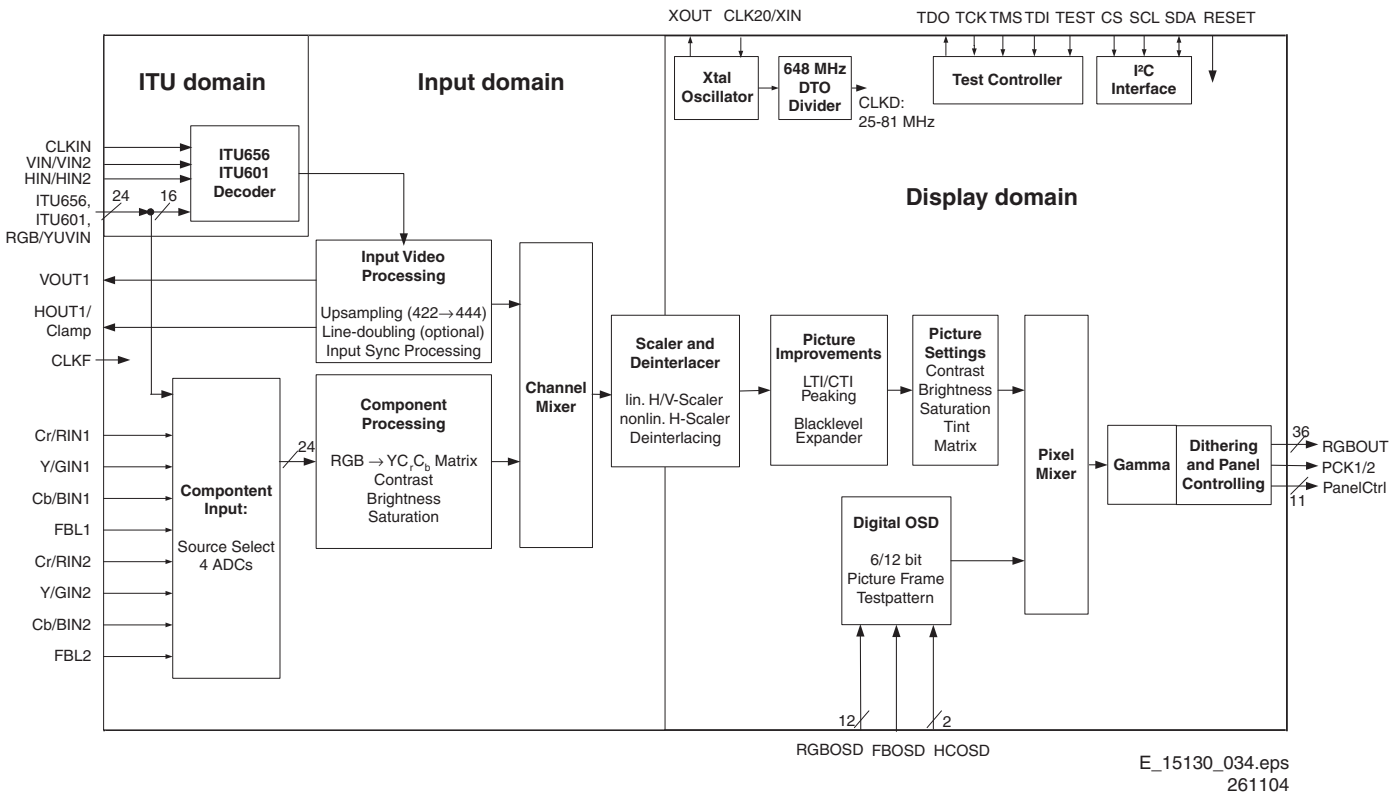
INT7/P2.0	1	56	P2.1/INT5/AIN1
RESET	2	55	P2.2/INT0/AIN2
P0.7	3	54	P2.3/INT6/VS01
P0.6	4	53	P2.4/NMI
P0.5	5	52	P2.5/AIN3/INT4/VS02
P0.4	6	51	OSCIN
P0.3	7	50	OSCO
AIN4/P0.2	8	49	P4.7/PWM7/EXTRG/STOUT
P0.1	9	48	P4.6/PWM6
P0.0	10	47	P4.5/PWM5
CSO/RESET0/P3.7	11	46	P4.4/PWM4
P3.6	12	45	P4.3/PWM3/TSLU/HT
P3.5	13	44	P4.2/PWM2
P3.4	14	43	P4.1/PWM1
B	15	42	P4.0/PWM0
G	16	41	VSYNC
R	17	40	HSYNC/CSYNC
FB	18	39	AVDD1
SDI/SDO/P5.1	19	38	PXFM
SCK/INT2/P5.0	20	37	JTRSTO
V _{DD}	21	36	GND
JTDO	22	35	AGND
WSCF	23	34	CVBS1
V _{PP} /WSCR	24	33	CVBS2
AVDD3	25	32	JTMS
TEST0	26	31	AVDD2
MC FM	27	30	CVBS0
JTCK	28	29	TXCF

E_15130_033.eps
261104

Figure 9-2 Internal Block Diagram and Pin Configuration ST92195B

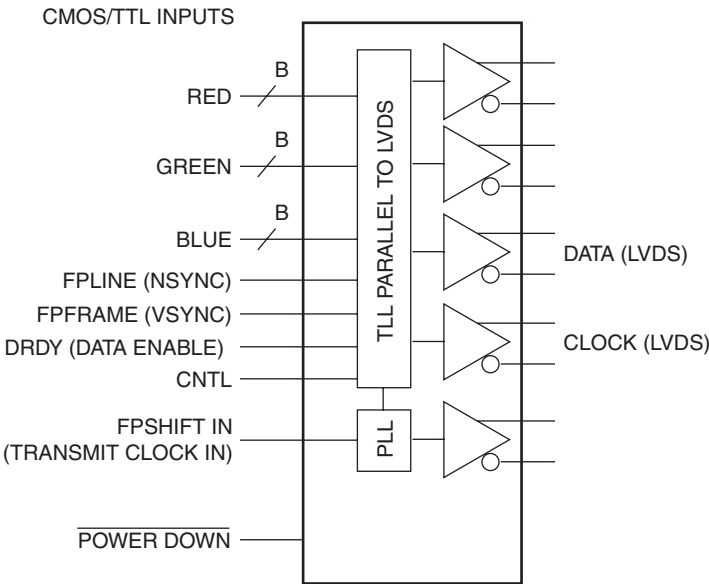
9.7.3 Diagram DPS9450A

Block Diagram

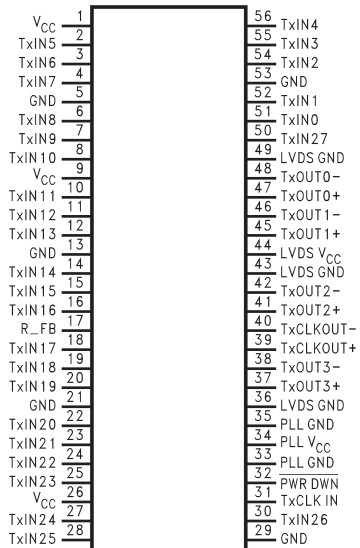


9.7.4 Diagram DS90C385

Block Diagram



Pin Configuration



9.7.5 Diagram MSP3410G

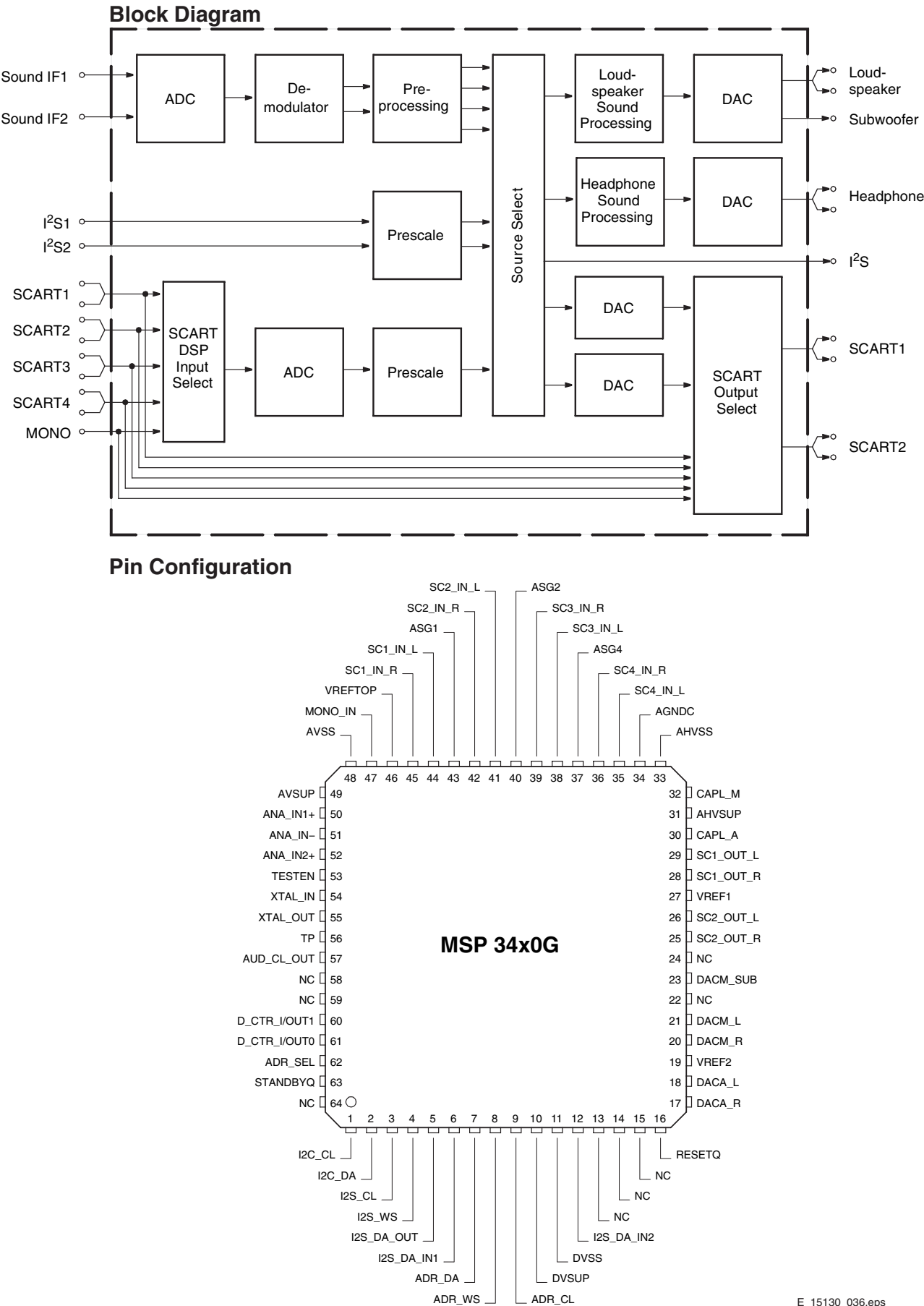


Figure 9-5 Internal Block Diagram and Pin Configuration MSP3410G

Spare Parts List

RM01	4822 051 30221	220Ω 5% 0.062W
RM02	4822 117 12925	47kΩ 1% 0.063W 0603
RM03	4822 117 13632	100kΩ 1% 0603 0.62W
RM04	0300 206 10131	100Ω 5% 1/4W
RM05	4822 051 30472	4.7Ω 5% 0.062W
RM06	4822 051 30472	4.7Ω 5% 0.062W
RM07	4822 117 12902	8.2kΩ 1% 0.063W 0603
RM08	0300 106 12261	1.2kΩ 5% 0603
RM09	4822 051 30562	5.6kΩ 5% 0.063W 0603
RM11	0300 106 24261	2.4kΩ 5% 1/10W 0603
RM12	4822 051 30472	4.7Ω 5% 0.062W
RM13	4822 051 30472	4.7Ω 5% 0.062W
RM14	4822 051 30102	1kΩ 5% 0.062W
RM15	4822 051 30472	4.7Ω 5% 0.062W
RM16	4822 051 30101	100Ω 5% 0.062W
RM17	4822 051 30562	5.6kΩ 5% 0.063W 0603
RM18	4822 051 30102	1kΩ 5% 0.062W
RM20	4822 051 30102	1kΩ 5% 0.062W
RM21	4822 051 30008	Jumper 0603
RM24	4822 051 30471	47Ω 5% 0.062W
RM25	4822 051 30008	Jumper 0603
RM26	4822 051 30472	4.7Ω 5% 0.062W
RM27	4822 051 30472	4.7Ω 5% 0.062W
RM28	4822 051 30562	5.6kΩ 5% 0.063W 0603
RM29	4822 051 30273	27kΩ 5% 0.062W
RM30	4822 051 30101	100Ω 5% 0.062W
RM33	4822 051 30008	Jumper 0603
RM34	4822 051 30008	Jumper 0603
RN01	0301 406 68321	68Ω 5% 0.1W 0603
RN02	0301 406 68321	68Ω 5% 0.1W 0603
RP01	4822 051 30681	680Ω 5% 0.062W
RP02	0301 086 22010	22Ω 5% 1W
RP03	4822 051 30102	1kΩ 5% 0.062W
RS06	0301 406 68321	68Ω 5% 0.1W 0603
RS07	0301 406 68321	68Ω 5% 0.1W 0603
RS08	0301 406 68321	68Ω 5% 0.1W 0603
RS09	0301 406 68321	68Ω 5% 0.1W 0603
RS10	0301 406 68321	68Ω 5% 0.1W 0603
RS11	0301 406 68321	68Ω 5% 0.1W 0603
RS12	0301 406 68321	68Ω 5% 0.1W 0603
RS22	4822 051 30103	10kΩ 5% 0.062W
RS32	4822 051 30101	100Ω 5% 0.062W
RS33	4822 051 30101	100Ω 5% 0.062W
RS34	4822 051 30332	3.3Ω 5% 0.062W
RS35	4822 051 30332	3.3Ω 5% 0.062W
RS36	4822 051 30332	3.3Ω 5% 0.062W
RS37	4822 051 30103	10kΩ 5% 0.062W
RS38	4822 051 30332	3.3Ω 5% 0.062W
RS39	4822 051 30102	1kΩ 5% 0.062W
RS40	4822 051 30008	Jumper 0603
RS42	4822 051 30008	Jumper 0603
RS43	0301 406 68321	68Ω 5% 0.1W 0603
RS44	0301 406 68321	68Ω 5% 0.1W 0603
RS45	0300 106 12161	120Ω 5% 0.1W 0603
RS46	0300 106 12161	120Ω 5% 0.1W 0603
RT01	4822 051 30103	10kΩ 5% 0.062W
RT02	4822 051 30103	10kΩ 5% 0.062W
RT03	0300 116 10261	75Ω 1% 0.1W 0603
RT04	4822 051 30331	330Ω 5% 0.062W
RT05	4822 051 30479	47Ω 5% 0.062W
RT08	4822 051 30008	Jumper 0603
RT09	4822 051 30008	Jumper 0603
RT10	4822 051 30222	2.2kΩ 5% 0.062W
RT11	0300 106 83461	2.2Ω 5% 0.1W 0603
RT12	4822 051 30008	Jumper 0603
RT13	4822 051 30331	330Ω 5% 0.062W
RT14	4822 051 30563	56kΩ 5% 0.062W
RT15	4822 051 30681	680Ω 5% 0.062W
RT17	4822 051 30221	220Ω 5% 0.062W
RT18	4822 051 30223	22kΩ 5% 0.062W
RT19	4822 051 30682	6.8Ω 5% 0.062W
RT20	4822 051 30682	6.8Ω 5% 0.062W
RT21	0300 106 68461	680K 5% 1/10W 0603
RT22	0300 106 22461	220kΩ 5% 0.1W 0603
RT23	4822 051 30562	5.6kΩ 5% 0.063W 0603
RT24	4822 051 30101	100Ω 5% 0.062W
RT25	4822 051 30101	100Ω 5% 0.062W
RT26	4822 051 30183	18kΩ 5% 0.062W
RT27	4822 051 30223	22kΩ 5% 0.062W
RT28	4822 051 30331	330Ω 5% 0.062W
RT29	4822 117 13632	100kΩ 1% 0603 0.62W
RT32	4822 051 30008	Jumper 0603

RV17	0300 116 10261	75 Ω 1% 0.1W 0603
RV18	0300 116 10261	75 Ω 1% 0.1W 0603
RV19	0300 116 10261	75 Ω 1% 0.1W 0603
RV20	4822 051 30008	Jumper 0603
RV21	0300 116 10261	75 Ω 1% 0.1W 0603
RV22	0300 116 10261	75 Ω 1% 0.1W 0603
RV23	0300 116 10261	75 Ω 1% 0.1W 0603
RV26	0300 106 12161	120 Ω 5% 0.1W 0603
RV27	0300 116 10261	75 Ω 1% 0.1W 0603
RV28	0300 106 22261	22 Ω 5% 0.1W 0603
RV29	4822 051 30123	12k Ω 5% 0.1W
RV30	4822 051 30331	330 Ω 5% 0.062W
RV31	4822 051 30223	22k Ω 5% 0.062W
RV32	4822 051 30008	Jumper 0603



LA01	6080 000 00221	10μH 5%
LA02	6080 000 00221	10μH 5%
LA03	6080 000 00221	10μH 5%
LA04	0360 702 04111	Bead
LA05	0360 702 04111	Bead
LA06	0360 702 04111	Bead
LM01	6080 000 00221	10μH 5%
LM02	6080 000 00221	10μH 5%
LM03	6080 000 00221	10μH 5%
LP02	6080 800 00341	33μH 5% 2A SMD
LP03	6087 800 02411	Ferrite bead 3.5*9*0.8
LP04	6080 800 00311	3.3μH 2.5A SMD
LT01	6080 000 00011	10μH 10% 0.16A
LT02	6080 000 00071	3.3μH 5% 0.21A
LT04	0360 702 04111	Bead
LT05	6080 000 00221	10μH 5%
LT06	6080 000 00151	180μH 100mA SMD
LT07	0360 702 04111	Bead
LT08	6089 800 00121	4.7μH 5%
LT09	6080 000 00011	10μH 10% 0.16A
LT10	6089 800 00111	1μH 5%
LT11	6089 800 00111	1μH 5%
LT12	6080 000 00011	10μH 10% 0.16A
LT14	0360 702 04111	Bead
LT15	0360 702 04111	Bead
LV01	6080 000 00221	10μH 5%
LV02	6080 000 00221	10μH 5%
LV03	6080 000 00221	10μH 5%
LV04	6080 000 00221	10μH 5%
LV08	6080 000 00221	10μH 5%
LV09	6080 000 00221	10μH 5%
LV10	6080 000 00221	10μH 5%
LV11	6080 000 00221	10μH 5%
LV12	6080 800 00131	3.3μH 0.41A
LV13	6080 800 00131	3.3μH 0.41A
LV14	6080 800 00131	3.3μH 0.41A
LV15	6080 800 00131	3.3μH 0.41A
TM01	0468 480 00001	BC848B
TM02	0468 480 00001	BC848B
TS01	0460 000 00371	SOT-23
TS02	0460 000 00371	SOT-23
TS03	0468 480 00001	BC848B
TT01	0468 480 00001	BC848B



DM01	4822 130 30621	1N4148
DM02	4822 130 30621	1N4148
DP01	0483 214 23201	1N4007
DP02	0483 270 28001	BYW76 SOD-64
DP03	0485 044 56111	BZX85C DO-41
DP04	4822 130 30621	1N4148
DP05	0482 102 00021	SS32 SMD
DS01	4822 130 30621	1N4148
DT01	4822 130 31983	BAT85
DT02	0480 000 05241	BA591
DT03	0480 000 05241	BA591
DT04	0480 000 05241	BA591



QP01	4822 130 41053	BC639
QT01	0468 480 00001	BC848B
QV01	0468 480 00001	BC848B
IA01	0450 000 00981	TD47057AQ
IA02	0450 000 01781	MSP3410G
IM01	0450 000 91241	ROM version /00
IM01	0450 000 91251	ROm version /58
IM01	0450 000 91261	ROM version /01 & /01
IM02	9322 147 25682	M24C16-WBN6
IP01	0452 381 03171	LF18C
IP02	0452 381 03161	LF33C
IP03	0452 381 03151	LM2596
IS01	0450 000 00091	DS90C385MDT
IS03	0450 000 01901	DPS9450

IT01	0450 000 01811	TDA9885
IT01	0450 000 01821	TDA9886
IT02	0450 000 08781	MC34063
IV01	0450 000 03771	VPC3230D

11. Revision List

11.1 Manual xxxx xxx xxxxx.0

- First release.

11.2 Manual xxxx xxx xxxxx.1

- Block diagrams are updatedand more clear.
- Partslist updated with mechanical parts and ROM code of SW for the different regions.